DOCUMENT RESUME

ED 180 734 RC 011 776

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TITLE Report From Swaneng Hill--Education and Employment in an African Country.
INSTITUTION Dag Hammarskjold Foundation, Uppsala (Sweden).
PUB DATE 74
NOTE 246p.

EDRS PRICE MF01/PC10 Plus Postage.
DESCRIPTORS Community Development; Community Involvement; *Cooperative Programs; Course Descriptions; Developing Nations; Economic Development; Educational Change; Educational Objectives; *Education Work Relationship; Experiential Learning; *Job Development; Justice; *Models; Productivity; Program Descriptions; Relevance (Education); *Rural Development; Secondary Education; Skill Development; Student Attitudes; *Technical Education; Vocational Education; Volunteers
IDENTIFIERS *Botswana

ABSTRACT

Opened in 1963, the Swaneng Hill School in Serowe, Botswana, was an experiment for its untrained founders whose objectives were to reduce the exclusiveness of secondary education, equip students with skills and knowledge needed for development, make the school a focal point for community development, and instill a sense of social justice in the educated minority. Severe problems in implementing policies, staff turnover, student attitudes, school conditions, and insufficient jobs for graduates caused a slow radicalization of the founders and a change in direction of the school away from the production of intellectuals to the production of workers with skills matched to the market place. Among the strategies the founders employed were a policy of voluntary labor on the part of all staff and students; the creation of the Serowe Builders' Brigade (and subsequently six other trade brigades), a self-financing program to teach construction to students not accepted into secondary school; Boiteko, a model self-help community development project and cooperative enterprise; and the instigation of a course in social and economic development. The founders advocate a dual policy of modernized and popularly based development, a combined work and education curriculum, and reformed secondary education on a mass scale. (SB)

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General editor: Sven Hamrell

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ISBN 91-85214-01-9

Printed in Sweden by Almqvist & Wiksell, Uppsala 1974

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Preface

Originally this book was intended to be a collection of various essays that I had written about my work at Swaneng Hill School and in Serowe at different times over a period of nearly 10 years. This collection of essays would have reflected the steady evolution which my thinking has undergone as my work has progressed. But this could only have been of interest if I had shown how, and explained why, my work has caused me to rethink and re-assess my ideas; any reader of a report on my work might reasonably expect me to have sifted my material, to have eliminated repetitions, to tell the story of the change in proper sequence, and to have drawn conclusions—however tentative—when experience suggested such conclusions.

My work in Serowe gives me little opportunity for the time-consuming job of collating, re-writing and updating that has been necessary. I have had to wait until I could get abroad and away from my daily pre-occupations in Serowe. Two opportunities to do so have been provided by the Dag Hammarskjöld Foundation, which is publishing this work, as I indicate in the acknowledgements, as a basic paper for a seminar which they will be sponsoring.

The fact that there have been changes in my thinking related to experiences in my work has caused some problems in the presentation and ordering of this report. There is a story to tell about what has been done and it has its own clear sequence. The interaction of ideas and their application can be clearly demonstrated in that sequence. There are also policies and issues to discuss. Some of the discussions are lengthy and would greatly interrupt the story if I digressed to deal properly with the particular issue. But at times some discussion of the issue is necessary to a satisfactory account of the story. This entails some repetition, because I sometimes have to summarise a matter in the context of the story and return to it at greater length later. On occasion, the lengthier treatment comprises an extract from one of the papers which have been incorporated into this book. If the extract is from a paper already published, I have incorporated it as it stands, with explanatory notes where I have changed my views. This is indicated by printing the extract in a different type.

There is also a problem of presentation occasioned by consideration of the reader. A seminar document might be read only by specialists and indeed this work must serve the purposes of a serious seminar. But quite

large numbers of people who have given practical support to my work would like to see a report from me and I would like the book to serve that purpose as well. I hope that the nature of the presentation will prove satisfactory, comprehensible, and informative to a variety of readers.

Little purpose will be served here by my attempting to explain why I have experienced such a ferment of ideas. That is mostly what Chapter 1 is about. Attempts to solve problems uncover new problems or new dimensions to the original problems. A proposed solution is soon shown to be inadequate or even inappropriate. It is not always possible to analyse or anticipate the total problem with complete accuracy. It may be that I went to the task inadequately equipped. In any event the evolution of ideas, through an interaction of theory and practice, continues and I can present this report on my work with confidence only if it is generally understood and accepted that it is an interim report.

Notes. For the reader's information, the currency used in Botswana is the South African rand and its symbol is simply R.

Some readers may be unfamiliar with the Brigades, which I describe in Chapter 3. At the first feeling of bewilderment, I suggest that the reader should turn to the end of Chapter 3, where he will find "A short guided tour of the Brigades and Boiteko".

Tables 5, 6, 11, 12, 13, 14 and 15 are intended only to provide a rough guide to the costing of possible future programmes. To a very large extent they are informed by actual experience, but they are not designed to be precise and exhaustive budgets. The main purpose of making these estimates is generally to examine the possible wider replicability of the programmes, on financial grounds, in a poor country. In this context, the reader should note the comments on page 169.

Acknowledgements

The Dag Hammarskjöld Foundation in Uppsala is sponsoring a seminar on "Education and Training, and Alternatives in Education in African Countries" in 1974. The Foundation has been interested in my work in Botswana for some time, and the Director, Mr Sven Hamrell, suggested that I should collate the various papers I had written, for use as a working paper for the proposed seminar. The Foundation is publishing this book with this end in view.

The papers on which I have drawn in writing this book are listed below and, where applicable, I have also shown the purpose for which they were written and to which conferences they were presented.

"Education and Development in an Emerging Country" contained the substance of the lectures which I delivered on a visit to the Nordic countries in early 1967, under the auspices of the Scandinavian Institute of African Studies, of which Mr Sven Hamrell was Acting Director at the time. The booklet was published later in 1967.

"The Curriculum in a Predominantly Rural Country" was a paper which I presented to a seminar on "Education in a Predominantly Rural Country", held in Lesotho and organised by the University's Department of Education. The paper was read on my behalf and was later published by the University in a collection of the various seminar papers.

"The Brigade System of Education and Training" was a paper which I prepared for a meeting held early in 1969 in Gaborone and organised by the Ministry of Development Planning (as it was then), to discuss the co-ordination of Brigade activities in the country. The paper was later published in *Education in Eastern Africa*, a periodical publication of the Regional Council for Education.

"Education and Training in Relation to Rural Development" was a paper which I presented to two conferences, the first being the Africa Regional Conference on the Integrated Approach to Rural Development, held at Moshi, Tanzania, in October 1969, under the auspices of the U.N. Economic Commission for Africa and the Dag Hammarskjöld Foundation, and the second being a seminar on "Youth in African Commonwealth Countries", held in Nairobi, Kenya, in November 1969 and organised by the Commonwealth Secretariat. The Commonwealth Secretariat included the text of the paper in its report on the seminar.

"Swaneng Hill School, Botswana" was a paper which I presented to the Conference on Education in Rural Areas, organised by the Commonwealth Secretariat and held at Legon, Ghana, in March–April 1970.

"Education for Rapid Development and Full Employment" was first presented by me to a re-orientation seminar for Danish and Norwegian teachers in Zambia, organised by the Educational Adviser to the Danish International Development Agency in Lusaka in April 1970. The paper was amended for presentation to a joint seminar for the staffs of the Shashe River and Swaneng Hill Schools, held at Swaneng Hill later in 1970. It was further amended and presented under the title of "Policies for Rapid Development and Full Employment" to a Conference on Rural Development organised in Botswana in July 1970 jointly by the Botswana Society and the National Brigade Co-ordinating Committee. The papers of this Conference were later published together in *Botswana Notes and Records*, a publication of the Botswana Society.

"Brigades: Some of the Constraints and Experiments" was published by the *Bernard van Leer Foundation Newsletter*, and by *Kutlwano*, a monthly publication of the Botswana Government Information Department.

"Boiteko: An Experiment in Rural Development" was published in early 1973 in *Botswana Notes and Records*.

Various other papers on which I have drawn in this book include my opening address to the first joint seminar for the staffs of the Swaneng Hill and Shashe River Schools held at Swaneng Hill in July 1969, a paper I presented to the Swaneng Hill School staff in October 1969 on Brigade academic teaching, and a report I prepared for the Swaneng Board of Governors in January 1971 on the consolidation and development of Brigades.

Two reports commissioned by the National Brigade Co-ordinating Committee and written by Mr Anthony Martin and Miss Virginia Makins are summarised in Appendices 4 and 5 respectively. The Permanent Secretary for Education in Botswana, the National Brigade Co-ordinating Committee and the authors of the reports have kindly consented to the publication of the summaries as appendices in this book.

The thinking that lies behind this book and the implementation of the ideas described in it owe much to the large number of people with whom I have worked, conferred and associated at the Swaneng Hill and Shashe River Schools, in Serowe and Gaborone and at other places in Botswana and abroad. There have been many situations, discussions, conferences, meetings and seminars, which have provided excellent learning opportu-

nities and a vigorous exchange of ideas over the years. I have acknowledged the special contribution of Robert Oakeshott at various places in the book, and I have made mention of others here and there, but I wish to record my thanks and appreciation to all the many people with whom I have worked over the years, too numerous to mention individually by name.

A word may be appropriate about Robert Oakeshott's career. He was a journalist for a time and served in the *Financial Times* Paris Office. He later worked for the Zambian Government in its Planning Unit, before coming to Swaneng Hill School. He is at present engaged in promoting a co-ownership project in Sunderland in the north of England.

CHAPTER 1

The Years of Trial and Error

At the end of 1961, I was an exile from South Africa. I was able to secure British citizenship—I am now a citizen of Botswana—but I was still irresistibly drawn to the South of Africa, where I was born and had spent most of my life. I had come to feel—and this is explained in my book *Guilty Land*—that there was very little white liberals could do to alter the course of events in South Africa, especially from exile. And I would, in any case, have been arrested if I had returned home. I wanted to be as near home as possible. I knew that there was a great lack of educational facilities in the three countries, then British protectorates, which bordered South Africa, and particularly in Bechuanaland. When South Africa was one day liberated from its oppressive minority rule, the people of the protectorates and the people of South Africa, geographically, economically and ethnically linked as they were, would surely share a common destiny. The Bechuanaland Protectorate—as it was then—was a very poor country indeed. The *per capita* income was then about £25 per annum. Indeed, even now its people are only a little less poor. They depend overwhelmingly on subsistence agriculture in a very arid climate. There was a clear need for more schools, especially if they could help promote development. It may have been naive, but I felt that work in education in Bechuanaland could have some political usefulness in Southern Africa.

In early 1962 my wife, Liz, and I set out on an overland journey through Africa to what is now Botswana. We headed for Serowe, which I knew from spending two weeks there two years previously as a refugee. It was then the largest town in Botswana, with a recorded population of 30 000. Many of its inhabitants spend most of their time at their cattle posts or on their farmlands and at any one time there may be only half of the recorded population in residence there. Serowe was the headquarters of the 200 000 strong Bamangwato tribe; it had no secondary school and indeed there was only one secondary school then in existence in the Bamangwato territory. While waiting for permission to start a secondary school, Liz and I found jobs in a local primary school. My salary was £12 per month and Liz drew £9 a month. We had no other

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income and wrote many letters for money to start our school. We found a room in the town and cycled to the primary school each day.

The primary-school pupils whom we taught were very interested in our plans for a secondary school. They knew how difficult it was to get a secondary education. In 1962 the total population of Botswana was half a million and there were only six secondary schools with a total enrolment of about 1 500. There were 60 000 children in primary schools and from our pupils we learnt the personal meaning of the competition for secondary-school places.

In September, 1962, we were granted a piece of land on which to build our school by the head of the Bamangwato tribe. Some of the primary-school boys whom we were teaching came to help us clear the land of thorn trees each afternoon. We paid them a small fee, because we were uncertain whether we would have enough money to start our school, and their work might be in vain.

The beginning

In December 1962, we received our first cheque (£500 from the Ethical Union in Britain) and the South Africa Work Camp Association sent a multi-racial work camp to help us to build our first classroom and a rondavel for my wife and me to live in.

The school opened in February 1963, and we admitted the first 28 pupils who applied, without attempting any form of selection. There was a wide range of abilities, as we later discovered.

At my suggestion, the pupils elected a head boy and a head girl. During the first week the head boy came to ask me if I could provide them with a sports field. I pointed out how little money we had left after building our first buildings and buying desks and chairs for them. The students considered and discussed this, and decided to give themselves a sports field. They worked very hard at every available free moment, chopping down innumerable thorn trees and digging out the stumps. From that moment onwards, voluntary work became a regular feature of student activities. On Saturday mornings there was usually quite a large turn-out of students engaged in a variety of activities.

Before we started building the school, my wife and I had hoped that we would be able to rely on work camps and voluntary labour, but we had no other ideas about education and development. Apart from our brief service in the primary school, we had no previous teaching experience. Nor had we worked in a developing country.

In the years that followed, we developed many ideas, not all of them original, but all of them spontaneous and relevant to the situation in which we were working, and related to actual experiences. All that I know about education I had to learn on the spot, and while teaching and building a school; I was able to assess the content and purposes of education, about which I was learning, in the light of the needs of the people among whom I was working. I had also to worry about the costs of building and running the school, so coming up against the connection and interaction between education and economics.

The first lesson

The policies of our school began evolving in response to a few specific early experiences. When the first buildings were erected at the school with the aid of the work camp from South Africa, I was impressed with their enthusiasm, which was not, however, matched by technical competence. When the students cleared their own sports field, it needed hard work but little technical competence, but when they came to carry their voluntary work later into building classrooms, they were restricted to the labouring jobs, like digging foundation trenches and mixing concrete and mortar. Some of the students wanted to learn how to build so that they could complete a building by themselves. At that moment we were lucky to get the services—as a volunteer—of a man named Martin Kibbiewhite, who was competent and experienced in a number of practical skills and had had several years of teaching experience. He began teaching the theory and practice of building construction. It was a first step, taken when we were not fully aware of all the later implications and considerations, towards diversification of the curriculum. It has also meant that our students assisted by their staff, have since built three science laboratories and a large school hall and that they have participated in constructing a number of other buildings. They still did the labouring jobs—indeed, they helped build a large dam on the school site—but they could manage, with staff supervision, some of the more skilled artisan work too. Voluntary work had come to represent a real saving in costs. It was possible to demonstrate that this saving helped the school to grow more rapidly than it would otherwise have done. Money saved was spent on new classrooms, on buying equipment and on hiring more volunteer teachers (local secondary teachers are scarce even now). Donor agencies were impressed by the element of self-help that this voluntary work represented and responded with financial aid.

The second lesson: Discovering the school-leaver problem

During those early years at Swaneng Hill School, I was having to turn away young people looking for a place in the school. At the beginning of each year, every headmaster is besieged by imploring children and parents, some tearful and many bringing every influence and pressure at their disposal to bear personally on those of us responsible for admissions. It is a very harrowing experience. At that time I responded in two main ways to these pressures; a little later I was to respond again in yet a third way. The first response was in the way I began to formulate my philosophy for the school in its infancy. I wrote that

in many developing countries only a tiny minority of the population are likely in the foreseeable future to complete secondary education, and most of them will do so at the expense of the taxpayers, for whom money is scarce, or as beneficiaries of external aid or a compound of both. Even if only because of this, these few educated people have some obligation to contribute to the process of development for others.

At that time, I dimly perceived that

the pace of development will depend upon several factors, one of which is the priority that the rulers assign to it. We are much concerned to relate education to development. We are extremely anxious to discourage the notion that education is just a ladder on which ambition climbs to privilege.

I[1] hardly then understood all the implications of it, but I could conclude that

we try to ensure that, when our students leave us, they will feel under some compulsion from themselves, through sympathy and fellow-feeling with the poor and hungry, to fight want, ignorance and disease in their country. We seek to equip them not only with the commitment but also with the knowledge and skill to tackle themselves the problems facing their country.

[1] Frequently in this book I use the word "I" in talking of my work and equally frequently "We". Generally, I use "I" when I wish to talk of personal thoughts, responses and initiatives. Unless the "We" obviously has some other reference in particular contexts, as in the very first part of the book to my wife and me, it refers to the various groups of associates who work, or have worked, with me on different projects. In that case, the thoughts, responses and actions are probably less personal and more collective.

It was a long-term hope, based on the recognition that some of my students might help to determine the pace and priorities of future development.

A short-term response to the pressures was also needed. At that time I believed simplistically that education was a necessary tool for development and what was needed was education for as many as possible. The explicit aim of the development process going on in Botswana (and in most countries like it) was to modernise, and education was a major tool of this modernisation. I did not at the time strongly question this and I thought we would achieve social justice by expanding education as rapidly as possible and by persuading those we educated to commit themselves to promoting development as rapidly as possible with the aim of spreading its benefits as widely as possible.

The third lesson: Discovering the community

In mid-1963 I spoke quite informally to a group of villagers about the high prices in the trading stores—mainly European-owned—and how they might form a consumers' co-operative. A series of meetings followed at the school and a bulk purchasing group was formed. By late 1964 the Swaneng Consumers' Co-operative Society was a registered co-operative society. In 1972, 2 100 members bought goods in the store worth R 190 000. For six years the Society has each year declared a dividend on purchases of 5% and in the seventh and eighth years 7.5%. Some of the staff were involved in the running of the Society and in training the manager. A few students have over the years been elected to the management committee. On the whole, the school's total involvement in the Society was marginal. But I had learnt a lesson of importance from my regular meetings with the people from the village, and I then incorporated in the aims of the school, the belief, as I expressed it at the time,

> that the secondary school in a developing country can be a focal point for development in the surrounding community. The talents and intelligence of both staff and students are an asset of enormous value, which should properly be utilized for development in a country's overall planning and development. As the school participates in development, it is also able to carry out its function of educating its students for development; if the students participate fully in the implementation of the school's role as a focal point for development in its area, they will thereby have an opportunity of learning both skill and commitment.

The fourth lesson: More school-leaver problems

At the beginning of 1965 came my third response to the many imploring young people encamped outside my door seeking entry to the school. It was already clear that, however valuable in themselves our efforts to bring the benefits of secondary education to greater numbers might be, there were just too many applicants for us to be able to deal with in this way. We should certainly pursue this approach but at the same time we should be looking for other solutions as well. I discussed the matter with the Acting Head of the Tribe, Leapeetswe Khama, and he called a tribal gathering. I put to those assembled a proposal which he and I had agreed on in advance. I tried to explain that the primary-school-leaver problem existed because there were not the funds or the other resources required either to educate or to employ the thousands of young people turned away from secondary schools. This was a lesson I had learnt from trying to run a school on a shoestring. We offered to young primary-school leavers an on-the-job apprenticeship-type training, in which trainees would work productively while they learnt to build. They would undertake building for public and semi-public authorities at relatively low cost. Their earnings as builders, while they learnt, would cover costs. We called this a Builders' Brigade; the name was taken from Ghana, though the important principle of covering costs differed from the first Brigades formed in Ghana. We chose this name to emphasize that this was not a school or other training centre with a high theoretical and classroom content. In a Brigade 80% of the time of a trainee is spent on the job and only 20% in a classroom. Some 40 young men joined the first Builders' Brigade and we set them to work building themselves a centre. The total capital expenditure on tools and on the centre was about £1 000. The centre was situated away from the secondary school to emphasize the difference between the Brigade and the school.

Although we did not realise it at the time, we had unconsciously chosen in the word "Brigade" a name that in translation had a meaning and relevance locally, as the tribes had until only a few years before had a system of regiments, originally for military purposes, in which all young men of the same age-group were called up to undertake public works in time of peace.

The Serowe Builders' Brigade has in eight years trained well over 150 builders, almost all of whom are now in employment, and more than 75 of whom have passed Government trade tests. This has been achieved at no cost to the state, the only subsidies being the management and technical skills of a small number of volunteers. In addition, a number of build-

ings have been erected over the years, in and around Serowe, by the Brigade, which could not have been put up at contractor's prices.

In 1967, we extended this type of training into other activities. We established a Carpenters' Brigade, a Mechanical Brigade, a Farmers' Brigade and a Textile Workshop for girls, where wool was spun and woven and where textile-printing and dressmaking were taught. We have since added an Electricians' Brigade and a Tanners' Brigade. By the end of 1972 all were covering a substantial proportion of their costs and some were covering all their costs.

Formulating objectives and strategies

By 1966 we had established the basic quests of Swaneng Hill School in consequence of our actual experience and work in Serowe. These were: How to inculcate a commitment to social justice among the educated minority and how to equip them with the knowledge and skills needed for development? How to make secondary education less costly, less exclusive and available to greater numbers of people? How to make the school a focal point for development in the community?

We were constantly looking for means of achieving these aims through the life and activities of the school and through its curriculum. We began deliberately to pursue the diversification of the curriculum. We offered as compulsory core subjects, English, Mathematics, Science and Setswana, the language of the Batswana. We introduced Metalwork, Woodwork, Building Science, Technical Drawing, Commercial Subjects, Art and Agricultural Science. These, we hoped, would help to provide the skills needed by a developing economy. Incidentally, some of these subjects provided students with skills that enabled them to help to build, furnish and equip the school and so to achieve important savings of limited resources.

From the beginning, we had included in the timetable discussions with the students about their society and the country's economy. We made some attempt to formalise these into a syllabus, but it was only after Robert Oakeshott joined us that we succeeded in doing this to my satisfaction. The course, which Robert Oakeshott in fact drafted, is set out in Appendix 3 and is discussed at length in Chapter 4. There has been a lot of controversy about the course, both in Botswana and outside it, though both our own University and the Cambridge Syndics are examining the subject for the time being. Though the course is fully discussed elsewhere in the book, I feel that it is of value to present a summary at

this point. My work with Robert Oakeshott in drafting the course, in drafting some of the early chapters of the textbook he is preparing for it, in arguing the case for the course against its critics, and in teaching it to students at various levels has been a very important learning experience for me and has helped me to develop my ideas and integrate my thoughts about the whole of my work in Serowe and in Botswana.

Development studies

The course has seven sections. The first is an economic-analysis section, explaining the factors of production, the meaning of consumption and investment, the importance of the surplus to development, provided some of it is invested rather than wholly consumed, and the meaning of specialization and how it depends on producing a surplus. The section also discusses money, employment and labour, the allocation of resources, capital accumulation and population growth.

The second section of the course deals with pre-industrial history, starting with man as a hunter and gatherer and proceeding through the first agricultural revolution to the eve of the industrial revolution. This section shows man's early efforts to use the resources of nature to his advantage, and also how each technological innovation was part of a cumulative process that made the next step possible, so creating the ultimate possibility of an industrial revolution. Here we stress the non-European origin of much of the early technological discoveries. The third section analyses scientific progress, both before and after the industrial revolution and notes its role in development.

The fourth section discusses politics and how governments and ruling classes have always played an important part in the control of the surplus. The fifth section concerns industrialisation. Here we show the main contrasts between industrial and pre-industrial societies. We then discuss the first industrial revolution, with all its exploitation of the labour of women and children and indeed the labour of working men; we note the contributions of slavery and colonial exploitation. We then proceed to look at the special problems of industrialisation today and some contemporary experiences of industrialisation. The problems of population explosion, rising expectations, prestige spending, and luxury imports are discussed, along with the pros and cons of intermediate technology and labour-intensive methods. The sixth section discusses social and cultural change related to economic development and industrialisation.

The section on the student's own country provides an opportunity to

locate the country's position in the spectrum of human development to explain the strategy of national development, and to identify a role for young people. Here the role of rural development, its meaning and implications, as well as the need to co-ordinate and harmonise the development of rural areas and urban areas can be discussed. In the course, young people are taught about the processes of production, the importance of the accumulation of tools and other forms of capital, the necessity to increase and spread diversified skills and knowledge, and the indispensable requirement of hard work for all.

Student responsibility

I believed that one way in which we might achieve our aims would be in giving the students a great deal of responsibility and in our attitude towards discipline. I quote here from one of my published papers.

It is not only in formal teaching situations that young people learn. Much can be learnt from practical work and students will learn, too, from the system by which authority is exercised and the manner in which discipline is enforced. Clearly the prefect and fag systems of public schools had their lessons. What has to be done in developing countries is to encourage initiative, reliability and self-reliance and a greater sense of responsibility, among other qualities. We will encourage these qualities by giving students maximum responsibility for their own affairs, perhaps in elected councils, by associating them with the management of the school as much as possible and generally by less authoritarianism.

Many of the young people attending schools in rural areas of developing countries have come from a background of strong patriarchial discipline. Tribal chieftainship still exists and its authority is still great; probably their country has just emerged from colonialism. Under these regimes, initiative, responsibility and organising ability are not encouraged. But these qualities are vital in developing countries. At Swaneng Hill School, we seek to encourage and promote them as much as we can. We believe in having the best possible relations between the teachers and the students whom they teach. This is vital from every point of view, especially from the point of view of development-oriented education, because student and teacher should combine together in constructive purposes.

The students who lodge at the school cook their own morning and evening meals, providing their food for themselves. They have formed a co-operative and work is shared on a rota basis. Each member pays his

share of the total costs and an elected committee administers the scheme. In addition, there is a school co-operative store run by the students themselves.

Many valuable purposes are served by encouraging the students to participate in, to organise and to administer student government, clubs, societies, and as many other activities about the school as possible. This helps to promote self-discipline, responsibility, understanding, commitment, the ability to organise, co-operation and a spirit of community service. Where necessary and desirable, the staff should be associated with their efforts.

We had a reasonably effective, elected, students' council, which had quite a lot of say in relation to student affairs and was consulted about important policy matters. Difficulties did arise about the implementation of several new policy proposals which I made to the students, but it would be sensible to leave these for discussion later in this chapter.

Involvement with the community

There were various attempts to involve the school in development in the surrounding community and to make it a focal point for development. In 1966 and 1967, ten of the senior students participated in a village development training programme whilst simultaneously pursuing their academic studies: they were given bursaries by the Community Development and Co-operative Development Departments. They were from time to time marginally involved in the management of the Swaneng Consumers' Co-operative Society. They helped to launch a cattle-marketing co-operative, explaining the scheme to people in the village. They organised fellow-student volunteers to help to build two primary-school classrooms. About the same time, we also ran a community development training course on behalf of the Department of Community Development. The Development Studies Department in the school organised a fairly successful income and expenditure survey on behalf of Government, which, like the community development training course, the Government financed. Groups of students participated in work camps helping to construct buildings at other secondary schools, and for a while we "adopted" a neighbouring primary school. Our Mathematics and Science teachers helped them with their problems in teaching these subjects and staff and students helped them build classrooms. Some of our staff and students helped a women's self-help group in Serowe. I wrote this at the time:

In the past, the policy of making our own school a focal point for development in the surrounding community was implemented in an *ad hoc* fashion and in response to the more obvious needs of the community. There was no overall plan for the implementation of the policy. Within the framework of the Development Studies syllabus we will, in future, plan the development, survey the local resources and see what can be done, and whether or not students and staff can implement the plan which together they will draft. Whatever plan emerges, and the way in which it is implemented, will provide a case study for the Development Studies textbook. It is anticipated that the school's main role in implementing the plan will be one of midwifery.

A school offering a fairly wide range of subjects would be more effective in giving effect to its role in promoting development than one limited to purely academic instruction. The inclusion in the school curriculum of (besides Development Studies) technical and practical subjects like agriculture (including dam-building), building construction, metalwork, mechanics and simple engineeering, woodwork and arts and crafts, would make it possible for staff and students to make a practical (albeit limited) contribution to the implementation of their local economic plan.

One of Robert Oakeshott's first jobs when he joined us was to draw up a development plan for Serowe, in which the school might participate. The plan which he produced was in fact a plan for the extension of the Brigade system of training into farming, textiles and engineering, which we began implementing in 1967. The school was only marginally involved in this, some of the students providing a little assistance with landclearing at the farm or in constructing some of the buildings for the new projects.

From its inception the School's Board of Governors was a body mainly elected by the parents with a few local officials as *ex-officio* members. At least once a year, a meeting of parents was held to elect Board members. Candidates for election were not confined to parents. This was intended to provide a channel for communication between school and parents.

Avoiding status structures

I believed that it was quite important to the school's aims and policies that the living standards of the students whilst in the school, especially those living in the dormitories and particularly in relation to the feeding

of all the students, should not be excessively higher than that of the people in the villages. There were two objectives here: one was to keep capital and recurrent costs, down, thus releasing funds for further growth, and the other was to prevent the school from becoming a place of excessive privilege. As it was, conditions for the students were much better than the conditions of those primary-school leavers who failed to gain entry to the school, and the conditions of parents generally. We had reasonably well-constructed buildings, running water, electricity and regular meals. Most villagers carried their water from taps dispersed around Serowe and a very few rich people could afford their own lighting plants. Few people outside the school ate as well as the students regularly did. I did not feel that our aim to inculcate social justice among students would be well served by allowing the school to become a place of privilege. In the same way, student participation in catering, cleaning, maintenance and development work, and the idea that they should undertake more productive work was not only intended to save money; it also recognized the importance of discouraging the feeling that largely academic work sets those who do it above those who do not.

Initially, the Brigades had been set up quite separately and quite apart from the school, because, when the Brigades began, we wanted to emphasize their difference from the secondary school. Later on, in an attempt to further the aims of the school, we tried to bring the two as much as possible into contact, given their different programmes. I had this to say at the time:

A school that attempts to cater, in some measure, for the academically less bright, as well as for the academically bright, may help prevent the creation of a status structure in society. There is a fair amount of evidence to suggest that grammar-school and public-school systems, have, whenever and wherever they have existed, contributed to the creation of status structures. Sir Alec Clegg, a leading British educationalist, speaking of education in England, has asked:

> Why is it that we cannot resist this compulsion to create a status structure in our society? We have tried gentility of birth and rejected it. We have tried grading according to money and we did not like it. I am not sure that to base a structure on brains unannealed by the great Christian virtues may not be the worst of the lot. To segregate a small minority of children according to their brains and educate them in isolation is an odd way of preparing them to work with all sorts of men.

Though Sir Alec was speaking of education in Britain, the questions he raises apply equally to developing countries, where the growth of a privi-

leged élite is likely to give rise to the very political and social problems that have pre-occupied developed countries for several decades

The measures for "integration" of school and Brigade were varied. We brought Brigade trainees into the School classrooms, where they were taught by secondary-school teachers who now split their teaching load between school students and Brigade trainees. Trainees continued to spend only 20% of their time in the classrooms and 80% on the jobs. Brigade trainees were available for selection in school sports teams, and the School Council and Brigade Trainee Elected Committees each sent representatives to a common council for discussion of common problems.

There were also economic arguments for links between Brigades and school, because, though there may be difficulties in practice about this, all sorts of facilities can be shared, including teaching and administrative buildings, equipment and staff, lighting and water facilities, and research laboratories. The work that the Builders' Brigade has done in putting up buildings at Swaneng has reduced the cost of building, so benefiting the school. The Farmers' Brigade has undertaken the supply of milk and other produce to the school, and has lowered the costs. The school has supplied a demand for the work and produce of some Brigades and has provided administrative support for them.

Expanding the school

I was more than willing to see our own school grow rapidly to absorb ever-increasing numbers of young people, and the point made by Sir Alec Clegg was one that I had very much in mind; a larger school was likely to take in "all sorts" of children. I was also ready to advocate that other schools should do the same as we were intending to do.

I should like to see the secondary school replaced by large post-primary institutions providing technical and commercial training, academic training, agricultural training, community-development training and even teacher-training. These institutions should be linked to Brigades and might select their students from among Brigade trainees.

My reasons for advocating an all-embracing institution are as follows. Technical and academic subjects ought not to be taught in separate institutions in isolation from each other, but in the same institution—and pupils specialising in either ought to take one, at least, of the subjects in the other. Administrators, teachers, community-development workers and

bankers all need to have a grasp of technology; the technologists, artisans and scientists need an education in the humanities. Every developing country needs a wide range of skills to promote its development; both practical and mental skills are required. A diversified curriculum in each secondary school will facilitate the provision of training in a wide range of subjects. The combination of several institutions into one will itself make the wider range of courses economic; it will prevent the duplication of academic faculties in a whole lot of different technical institutions and teacher-training colleges. Large centralised institutions can co-operate better with manpower planners in preparing and providing the professional, technical, clerical and entrepreneurial skills in the proportions required by sound economic planning. The wider curriculum would help institutions to cater better for a wider range of aptitudes among its pupils, and this it will need to do as development proceeds and as more and more young people are admitted to the institutions. Then again, by offering a wide range of subjects, including technical subjects, the establishment would become more effective in promoting development in the surrounding community. Finally, by catering for a wider range of abilities and by its links with Brigades, the institutions may help prevent the creation of a status structure in the society.

These post-primary institutions will be very large, with student populations of 700, 800 or 900 upwards, and will present organisational difficulties as well as human problems, but here we can look properly to the experience of developed countries, where comprehensive schools have existed for some years. A large institution has the advantage over several smaller specialist colleges that it can, by economy of scale, employ well-qualified, high-salaried people in its senior positions and buy expensive modern teaching aids like language laboratories and closed-circuit television.

The courses which I believe it would be appropriate for the all-embracing post-primary institution to offer are listed below. Additional technical subjects, such as leather-work and tanning or glass-work, might be suggested by the availability of particular natural resources in the environment.

English, Setswana (in our case; a major indigenous language elsewhere), mathematics, general science, biology, physics, chemistry, engineering, science, geology, geography, history, development studies (civics), art (including design), arts and crafts, agricultural science, metalwork, motor mechanics, woodwork, technical drawing, surveying, building science, catering, needlework, music, commercial studies, business and office

practice, book-keeping and commercial arithmetic, typing, stenography, printing, courses for teachers' training and for community and village development. Whether or not students in the large post-primary institutions would go on to take subjects like geology or surveying, motor mechanics or electricity would depend on the aptitudes they have for the practical subjects they take in their first year. And these aptitudes can be correlated with aptitude tests of other inherent abilities.

The post-primary institution should provide agricultural training at two levels (besides Brigade level). It should provide the facilities of an agricultural high school—to be as productive as possible—for those pupils who will be specialising in agriculture as research workers, field assistants, extension workers or even farmers (there is no reason why the Brigade system should be the sole source of trained farmers). Some of the most promising of the Farmers' Brigade trainees might be admitted to this course.

Other students not specialising in agriculture will take the subject like any other, as a necessary part of the foundation of knowledge needed by people in positions of responsibility in a predominantly agricultural country. But in this case more attention must be given to agriculture's place in the economy, and to agricultural economics, in the syllabuses.

In each student's learning programme there should be a mixture of practical and academic subjects. The boys include woodwork, metalwork or building science if they have a predominantly academic course. Students at the grammar school seem to acquire a contempt for manual work and this must be broken down. Practical subjects reinforce the lessons to be learnt in Development Studies about the processes of production, especially the importance of skills, tools and labour. The workshops at my own school are already providing evidence to our students that they can make things themselves and that the manufacture of goods does not depend on some kind of magic that is available only in foreign countries. At our school, we are making our own dormitory bunks, of tube and angle iron, our own laboratory stools, woodwork and metalwork benches, farm gates, technical drawing benches and stools, roof trusses of steel, laboratory tables, bookshelves, and carts.

Productive work in the school

If we could succeed in saving money through student work in building, furnishing and equipping the school, and through student involvement in catering, maintenance and cleaning, then it seemed to me that we might

also try to earn money through production to help pay the school's running costs. I had this to say at the time (and am again quoting verbatim from an earlier published paper).

Productive work by secondary-school students not only reduces the amount of subsidy necessary to maintain the establishment; it also helps to equate the institution's students with the trainees of the Brigades and to prevent the growth of an élite, pre-occupied with privilege, and it contributes to development in the community. The commercial possibilities of products of the school farm and of the workshops are fairly obvious. And the services of student enumerators in surveys clearly have an economic value.

The Science Department can investigate the industrial potentialities of local resources to see whether the school (or a Brigade) could start production. At my school, the Science Department has found limestone and at the school we are now burning and slaking our own lime for use in building mortar and paint at the school. Experiments in tanning have also been carried out at the school, using our own lime, and we are hoping to launch a Tanning and Leatherwork Brigade, which can use our locally produced lime.

The departments of English, of the indigenous language, of art and of history can all be involved in the production of a magazine to promote economic, social and cultural development. They can also be involved in publicity material for community development, co-operative development, literacy campaigns, census campaigns and surveys. Indeed, students can participate in these campaigns.

The products of the domestic science and needlework students have obvious commercial possibilities; the Art Department can also produce work for sale. The Commercial Department can provide help with the school's accounts, Brigade accounts and the accounts of the students' catering association.

We believed that Development Studies could only be really effective as an instrument of achieving the school's aims if its teaching was reinforced by all the various other measures I have described here. Productive work, voluntary work, our efforts to save money and our work in the community gave it life and meaning and also provided aids to teaching it.

Shashe River School

For some years I crusaded with missionary zeal for the spread of our ideas and policies, both in relation to the Brigades and in relation to

secondary education. With the secondary-school students specially in mind, I was able to write in 1967:

> If the staff are hardworking, enthusiastic and dedicated, it is because they find inspiration and stimulus in the dedication, enthusiasm, hard work and concern for others shown by the overwhelming majority of students.

I felt, however, that to maintain enthusiasm we should be seen to be making progress. It was necessary to demonstrate to Government and to the public of Botswana that our ideas could be made to work. There was some opposition from within Government and from educationalists and much scepticism. We were critical of conventional education and could expect some hostile reaction. We had public support, but it was not so much for our policies as for the simple fact that we had provided another school. But the essence of our case was that our methods could provide education for increasing numbers and we had to show this to be the case. This was one of the main reasons why I was keen to start a second school with Brigades on the lines of Swaneng Hill. I wanted also to show that people other than myself could make the policies work.

By late 1968 there was sufficient support in certain Ministries to make it possible for me to found Shashe River School and Brigades, in association with Government. Shashe River School was intended to have the same basic policies as Swaneng Hill, and the School and Brigades were planned from the beginning to be closely integrated. I am not sure to what extent this Government support reflected a real understanding of our policies and a commitment towards them, or how far it resembled the support of the public, which was primarily for additional secondary-school facilities.

The progress made in the building and growth of Shashe River School certainly did a great deal to maintain enthusiasm at Swaneng Hill as it grew older and bigger. At Swaneng Hill School a good proportion of the students, many of the staff and I were greatly preoccupied with constructing a very large school hall, which took up most of the energy and time devoted to voluntary work for over three years. Nevertheless we found time to participate in a number of work camps at the new sister school.

The plan is not the action

By the time that Shashe River School opened in 1969, we had a fairly coherent and comprehensive blueprint of aims and strategies for the re-

form of secondary education in a country like Botswana. Shashe River School had the advantage of starting off from scratch and benefiting from the experiences, including the mistakes, of the elder sister school. At Swaneng Hill implementing new ideas, policies and strategies meant changing a course already set. Some of the new ideas grew out of mistakes already made and wrong turnings already taken. In general, the formulation of aims and strategies that I have described in previous pages took some years to develop fully, but in the meantime the school itself was growing and, in the absence during that time of particular new strategies, conventional ways of doing things became established. These had later to be changed.

As Robert Oakeshott found even at Shashe River School, it is one thing to have a blueprint of aims and strategies; it is another to make them work. From now on I shall be discussing the problems of implementing our policies and strategies, and the changes in direction that sometimes had to be made because of those difficulties. At the same time the Brigades were growing and we were meeting new problems there and having to find solutions. Some of my experiencies with the Brigades led me to question some of the fundamental assumptions about secondary education.

Growth of Brigades: New problems

Although a separate chapter is devoted to a detailed discussion of the Brigades, I need at this point to show how they affected the development of my thinking about my work. To make references to the problems of Brigades meaningful to the reader not familiar with the story of their development requires me to set down as much of the background as will throw light on the account of the problems referred to.

When I founded the first Builders' Brigade in Serowe in 1965, I was responding primarily to the pressures of young people seeking places in my school. My experience up till then had been dominated by the struggle to find money to make my little secondary school pay its way. The Government, too, lacked the resources to build, equip and run more schools to cater for the many young aspirants. To provide a training that covered its costs was to break through one of the major barriers to expanding opportunities for further learning.

We have extended Brigade training into other activities and by and large we have accumulated enough evidence to show that cost-covering training in technical skills is possible and that reasonable levels of skills

can be transmitted in this way. At that time the only other form of technical training in Botswana was in a very expensive training centre which had a very low enrolment.

Having extended Brigade training into other skills areas, we discovered that the lack of resources to *run* educational institutions was not the only barrier to expanding educational facilities. The Builders' Brigade required little capital to start it. It has to date received about R4 000 and has made profits whilst training 45 young men. The Textile Workshop required R48 000 in capital grants and subsidies before it started covering the costs of training its 60 young women. The Mechanical Brigade (Serowe Engineering) needed R25 000 but was highly profitable almost immediately, with about 20 people in a combined programme of training and employment. The Carpenters' Brigade breaks even on its earnings and costs after a capital investment of about R3 000 with 45 in training. Serowe Electrical have managed to produce profits whilst training 12 electricians after an initial investment of less than R1 000. The Tanners' Brigade have so far had R6 000 in loans, grants and subsidies. They have not yet made a profit and will probably require a further investment of R4 000 to become profitable whilst training 18 tanners and leather workers. The Farmers' Brigade absorbed R150 000 and has facilities for training about 30 farmers; it is not yet profitable. Clearly, the higher the capital costs of launching Brigades, the greater the barrier to expanding this training facility.

From time to time one or other of the Brigades has had difficulties in disposing of its produce or, in the case of service Brigades, of finding someone to hire their services. If Brigades are to cover their costs, this problem has to be solved.

We have on occasion experienced difficulties in recruiting instructors and managers. Sometimes the problem is that there is no one in the country with the relevant skill. Sometimes the problem is that we cannot afford to pay from our earnings the kind of salaries that people with adequate relevant skills can command elsewhere. What is certainly true is that, if all other barriers could be overcome, so that a rapid expansion of Brigades became possible, we should find that a shortage of organisers, managers, and instructors in the various skills would prevent it.

The main barrier—insufficient jobs

The problem that has perhaps had the greatest impact on my thinking was that of ensuring that all our Brigade trainees found work. It has not

been difficult for builders, carpenters, mechanics and metal-workers to find paid employment with very satisfactory earnings. We do not anticipate problems in respect of the electricians. Botswana is embarking on new mining developments and most of the artisans in these fields will have no difficulty in finding work for some time ahead; we can expand those Brigades if we can find instructors. Builders may have greater difficulties when the present boom associated with the mining development eases off. But farmers, textile workers and tanners have been experiencing great difficulties in finding work, simply because there is little paid employment in these fields in Botswana.

If there is ever to be a rapid expansion of Brigades, it can only be after we have devised various measures, policies and programmes that will enable us to overcome the several constraints on expansion which I have listed above. Our experimental work in this respect is discussed in the chapter on Brigades. A discussion of our attempts to solve the problem of employment is, however, important and relevant to the sequence of this chapter. Equally important, at this point, is a discussion of the attitudes of trainees towards Brigades, and of the whole principle of cost-covering training. The three matters are interconnected and they also touch, at points, upon the problems of capital investment.

Quality versus quantity

It has always been my feeling that, if we abandon the goal of cost-covering, then from the outset we shall exclude any possibility of a really dramatic expansion of Brigade training. If they require subsidies, then they can grow only to the extent of the funds that a government with limited resources can devote to subsidising them. They compete, then, with schools and other training institutions and all other claimants on government funds. In the separate longer discussion on Brigades, I acknowledge that some initial subsidies to certain Brigades might enable a more rapid expansion later. In general, however, dependence on subsidies will limit the expansion of Brigades in the same way that the dependence of secondary education on subsidisation condemns it to being a programme for a minority.

The attempt to integrate Brigades and School was primarily intended to prevent the growth of status consciousness among the school students. However, it had an immediate impact on the Brigade trainees at Swaneng which we had not calculated. They began asking for improvements in their conditions of work, training and living, which, if conceded, would

have ruled out cost-covering. Discontent on these grounds, among Brigade trainees, was understandable. The Brigades presented a new and quite revolutionary programme of training through hard work four days out of five. Close by were friends and relatives in the secondary school, where, despite our attempts at reform, less than 20% of a student's time was spent on comparable work. Some of the Brigade trainees were rejected applicants for secondary-school places, and Brigade training was their only alternative—hardly even a consolation prize.

Brigade instructors, too, compared their conditions and pay with those of people similarly placed in the secondary school and there were pressures for improvements.

The debate about cost-covering in Brigades goes on in Botswana and I shall say a little more about it in the chapter devoted to Brigades. The point that arises here and which I emphasize is the conflict between quality and quantity. The programme that aims to cater for greater numbers is undermined by the programme catering for small numbers only. My own reaction, when faced with the conflict, was not to improve Brigade conditions beyond their capacity to pay for them, but to press for more rigorous conditions in the secondary school and to reduce the inequalities.

Job creation

When we recruited the first trainees into the Farmers' Brigade in 1967, we had in mind that we would try to set them up in some form of self-employment, either as individuals or in association with their parents or in some form of co-operative settlement. We told them that we could not guarantee paid employment and we refused the demand which they made on the first day they came that we should award certificates at the end of their training. We felt that this would encourage the belief that paid jobs would be available and undermine our efforts to face them with the reality that few paid jobs were available. If they insisted on the certificates, then they were looking for a commodity which we were not offering for sale. We told the first girls who joined the Textile Workshop the same.

About half way through the course the trainees began to get anxious about their future. They had expressed a number of grievances during the first year or so. The farmers were particularly discontented and some had left. I attended a number of gruelling meetings to discuss grievances.

They were having to make the farm from scratch, to clear the deep-rooted thornbush, to fence the gardens, to dig the beds, and to fence the cattle ranch. Robert Oakeshott took charge of the operation and was later assisted by two very able and very hardworking Danes, Karl-Gunnar Marstrand and Holger Gelting. All of them worked alongside the trainees and Robert Oakeshott was rigorous with himself and with everyone else. I joined in the exacting work when and where I could and a few students from the school came to assist from time to time. There is no doubt that the farmers felt exploited; they felt that they were not being trained properly, because their conception of training was classroom and theoretical work. When pressed, in discussions at "grievance" meetings, some would admit, grudgingly, that they were in fact learning quite a lot from the practical activities and operations of running a farm. I sympathised with the Farmers' Brigade trainees, because they were having to work a great deal harder even than the builders and certainly than the students of the secondary school, to get an education and training. All that I could do was to explain, again and again, the constraints under which Brigades operated, and to try to convince the trainees of our good faith.

One day a week the trainees were released to attend classes conducted by teachers from the school. Agricultural theory lessons were interspersed with practical work during the week. Many of the farm trainees, working with livestock or in the dairy, rose early and worked late and had time off during the day. They worked weekends in rotation.

The day-release academic classes covered English, Mathematics and Development Studies. In the section on Brigades I discuss our attempts to modify these subjects and our aims in teaching them in Brigades. The main point to make here is that we tried in the lessons to explain to trainees what Brigades were about, why secondary-school places were limited, why there was little paid employment, to orient the trainees towards self-employment and to help to prepare them to manage their own affairs. The first intakes of the Farmers' Brigade certainly came into contact with some very remarkable people. Two such were Tom Holzinger and Dafydd Gwylon, academic teachers from the school who later moved into full-time practical work at the farm and shared the teaching with Robert Oakeshott. They lived with the farm trainees.

We began to devise schemes for co-operative settlement of the trainees and to discuss these with them. We discussed with them the alternatives of working together or returning to work with their parents. We began putting out feelers for land. In the Bamangwato territory, land is communally owned and there is no freehold; the chief is responsible for

allocation, but he has to consult headmen and families who might have prior claims on the land in a certain area.

The controlling authority of Brigades, though they were now "integrated" with the school, was not the school's Board of Governors, but the Serowe Youth Development Association, comprising the chief, local Government officers and representatives of various organisations and bodies in Serowe. We put the problem of finding land before the SYDA, but they felt that the matter was one for the chief to settle himself. Leapeetswe Khama did what he could and he did find some land which was, however, far removed from markets. There were considerable tribal political difficulties in securing land and he met criticism even for making available the land that he did offer. The granting of land to a group of young people was not in accord with tribal custom.

The farmer trainees were themselves divided about the settlement plan. Some were willing to discuss it, even to try it out. Others were not and they were asking what we would do for them. They insisted that we had promised them that, when they left, they would receive assistance from us and they claimed that we had specified various forms of assistance. Long and bitter wrangling over this dominated the discussions for some time.

One could sympathise with the trainees. Botswana's climate is harsh and little reliance can be placed on arable farming, even for subsistence, let alone as a cash crop. The Farmers' Brigade itself was concentrating on poultry and egg production, dairy farming, gardens, goats and beef. These operations require water, which in Botswana means a borehole, and they require quite a lot of other capital. They also require proximity to markets or a very good transport system. We had invested a lot of money in the Farmers' Brigade and there was no sign of its covering its costs. The trainees knew that. We had taught them something about the relationship between investment and earnings. Some of the trainees were doing their own calculations about the amount of capital they might need to earn an acceptable remuneration.

Eventually, we reached agreement with the trainees by awarding each a terminal grant of R100, which was a great drain on the Farmers' Brigade resources. Through the intervention of the Government, we obtained a small plot of land near the new mining township of Selibe-Pikwe. Water was in very short supply and all we could obtain was the water washed out from the purification plant once a week. The trainees made a plastic-lined underground reservoir and eight of them, assisted by one of the Brigade staff members, made a start with vegetable and poultry

production. The water from the purification plant had a very high chemical content and after a while production was affected. The settlement was abandoned.

We called a halt on further recruitment to the Farmers' Brigade while we worked out new proposals for training and employment. The farm was, in consequence, short of hands, and we employed many of the former trainees.

Before going on to discuss our new proposals for training and employment and the lessons we learned from the problems of the Farmers' Brigade, I would like to make one point. Four or five of the 15 or so who survived the early ordeals of their training have proved to be quite exceptional people. They are good farmers and they have gained a very good perspective of the problems of their young, developing country. One of them, Ditshwanelo Makwati, was sent to spend three months in a Ujamaa village in Tanzania and returned a very much wiser man. His experiences there made more meaningful for him the discussions we had had about settlement and the lessons of Development Studies. He is now very much involved in our plans for a new programme of training and employment for the Farmers' Brigade.

Combined in situ and institutional training

When Robert Oakeshott left the Farmers' Brigade to start Shashe River School, Vernon Gibberd took over from him and together we began working on new plans for training and employment. There were a few possibilities open to us. One would involve small numbers only and was not widely replicable. It would recognize that Botswana at present imports most of its eggs, poultry, dairy products and vegetables. We might persuade Government to set up a few large farms like the Farmers' Brigade, around major centres. For that our old pattern of training would be appropriate. Another possibility—again offering limited job opportunities—was to set up irrigation settlements where surface water was available. Again, the old pattern of training might serve. Both project types would require considerable capital, which would be one of the reasons ruling them out as offering large-scale potential for dealing with school-leavers. The second approach would also require full support from the Government. The third possibility was that people should work in the villages where their homes were. This had the greatest potential for replication but also promised to be the most difficult to achieve.

For this third type of training the old pattern of farm training seemed

inappropriate. Most of the young people in villages wanted to get out of the village, via an institution which would train them, they hoped, for a paid job in a town or at least in Government service. Parents often encouraged these youthful aspirations, because there was so little hope at home. Were we not encouraging these aspirations ourselves, by isolating young people in institutions for three years? We thought that the key to solving this problem was that we should admit no trainees until the capital they would have, the farming operations they would undertake in the local conditions, and the land they would work were all identified and agreed from the outset. Thereafter, some of their training would be in the workplace itself.

The major problem of this approach to training and employment is whether their production will provide the participants with acceptable levels of earnings. When their training is complete, they (and their parents) will expect each to earn at least R15 a month. Some might expect more and would go off in search of work elsewhere unless they received more, but our experience shows that most job-seekers are disappointed and will eventually settle for around R15. Someone who had undergone training would accept less than R15 only with great disgruntlement. The hard reality of arid Botswana is that it is difficult to earn even that much from farming without a minimum of R200 to R300 in capital investment. A borehole, fully equipped, and some small stock and cattle may be necessary. In a small village, people may not have enough cash to buy the eggs, milk and vegetables produced, even though they may want to buy them. Total reliance cannot therefore be placed on the production of these commodities. Transport problems make sales outside the village to a town quite difficult.

Can we afford to provide every trainee with R200 to R300 in capital? How replicable would a programme based on this level of capitalisation be in a poor country? I am postponing a more searching look at the implications of these questions until the chapter on Brigades. Here I intend pursuing only one of these implications. Problems of capitalisation are one major reason for adopting a community approach to this new type of training rather than confining ourselves to working with individual families. We are selecting a few small villages, explaining our aims and asking them to assist us in training people of all ages in certain farming activities. The village should provide the land and as much capital as they can collectively afford. The groups in training will then work that land, but half of them will go into the Farmers' Brigade in Serowe for the first of a series of three-month sandwich courses, while the others

remain on the land allocated by the village. We will send to the village a trained graduate of the Farmers' Brigade to work with those of the group remaining. After three months, the two groups will change places. It will be less expensive to provide capital shared by such groups than it would be to do so for individual families. Drilling and equipping a borehole, for instance, costs at least R3000. A communal approach allows some trainees to go to the Farmers' Brigade without leaving the work in the village untended. Much of the cost of the whole operation, and especially of the training, would have to be covered by the Farmers' Brigade and the necessary earnings could only be provided if some of the training took place in productive, practical work on the institutional farm. The cost-covering Brigade is therefore an essential element in a village development programme. There, also, upgrading of skills and learning better methods of farming would take place. If I once thought that Farmers' Brigades could cover their total costs and the costs of such village training, as well as providing some capital from their income, I am now more dubious in the light of several years of experience. The implications of this are deferred for later discussion, as are the problems involved in the combination of training *in situ* and institutionally.

Discovering the problems of rural development

The problems of training and employment for farmers have so far dominated the discussion of these questions. The Textile Workshop graduates have also had difficulty in finding work. We set up a little co-operative involving a number of them, which has struggled for some years. The difficulties that it has faced, like the difficulties that faced graduates of the Farmers' Brigade, has caused us to look for better solutions to the problems of job creation. The search for workable and replicable employment models has at all times been bedevilled by the fact that the hopes of almost everyone are pinned on modernised development, as indeed my own had been until then.

It is a characteristic feature of the modern sector that its wages and consumption levels are relatively high. This has a profound effect on the aspirations of almost everyone. The modern sector arouses ambitions which its capital-intensive methods and high living standards prevent it from satisfying for all but a few, given the nation's poverty and its limited capital. But, once aspirations have been aroused and frustrated, it is only with dissatisfaction that people will return to rural areas. Privilege not only acts as a magnet but also creates dissatisfaction with

alternative avenues of training for jobs with lower salaries. Thus, even if we can create work in the rural areas, it will be with difficulty that we will get people into such jobs if levels of earnings are much less than those in towns. Modernised development hampers the search for replicable employment models in yet another way. The mass-produced goods of modern industry may not always be superior to those of the Brigade-trained craftsmen, but they are often cheaper. Tanners and leather workers must compete with both the leather and plastic products of more sophisticated technologies. To cut prices in order to become more competitive is to reduce incomes still further, unless tools or machines—usually involving additional capital—can be found to increase productivity. Seamstresses encounter competition from factory-produced garments. The Brigades themselves find the competition severe and in Botswana the problem is aggravated by the fact that the country is in a customs union with South Africa and its highly industrialised economy.

Prior to encountering the employment problems of the Farmers' and Textile Brigades graduates, I had been devoting most of my time and energy to education for modernisation, and to reforming it and making it more "relevant to the needs of a country like Botswana". I began, thereafter, to think of re-ordering my priorities, and to question some of my earlier assumptions. I needed to do a great deal of reading, research and thinking before coming to any conclusions. If I was going to re-order my priorities, I would have to explain and defend my position, not least to the many people working with me in the school and in the Brigades. If one of the by-products of the drive for modernisation was the obstruction of rural development and job creation, then I might need to begin arguing for reforms of the development strategy. One had to be quite sure that modernised development was not capable, by itself, of creating widespread employment rapidly, and that the benefits it brought were not being spread widely or rapidly enough to meet the elementary principles of social justice. One had also to be reasonably sure that any alternative strategy of development would do the job better.

I could find little evidence from the experience of most other developing countries that modernised development was capable, by itself, of creating mass employment, rapidly. Botswana's prospects had become bright, but a sober assessment of them gave no reason to believe that it would do better than other countries in a more favourable position. It seemed to me that the ideal strategy was a harmonised blend of modernised development and development relying on less expensive techniques

and technologies and on labour intensiveness. The harmonisation consists in reconciling the two approaches where they conflict. I believe the Chinese call this dual strategy "walking on two legs". If the reconciliation of the two approaches can be achieved by, for example, holding down wages in the modern sector, then the pay-off would be high employment and a significant rate of capital formation in both modernised industry and its labour-intensive counterpart. This discussion is pursued in Chapter 2, but it is worth making the point here that the Botswana Government established a high-powered Rural Development Council in 1972 (to which I was appointed by the President) and that in early 1973 the Government accepted a strategy of rural development which, in intention at least, comes very close to the approach I have just described.

Boiteko

In rethinking the objectives of Farmers' Brigade training, and in formulating a new combined *in situ* and institutional approach to the training, I became aware of the inadequate attention we had previously given in our work to the mobilisation of people other than youth. I now recognised that parents encouraged youthful aspirations to leave the villages because there was so little hope at home. Perhaps if parents saw more hope for themselves, they might be less inclined to urge their children to leave home. If parents, sons and daughters were working together in the same enterprise, there would be more reason still for parents to want their young people to remain with them.

To my mind, the essence of the policy of "walking on two legs" is that economic development, whether in the rural areas or elsewhere and whether the strategy be labour-intensive or capital-intensive, means ever-increasing production and diversification of production by a continually increasing number of people, be they young or old. Government and local government should be encouraged to improve social services and the infrastructure facilities in the rural areas, but there are large numbers of rural people of all ages who are unemployed or underemployed who need to be drawn into production. The projects and enterprises necessary to do this were lacking. In 1969, I set out to create, through experiment, a model project capable of replication, that could engage any of these unemployed and underemployed in production. The criterion of replicability made it essential that techniques and tools of production should not require high capital investments. The maximum use of local raw materials eliminated the need to tie up capital in imported materials.

Simplicity of production techniques and tools was important not only to save capital but also to avoid dependence on foremen and supervisors, who are not only expensive but are not in any case available if replication is the aim. Management was in the hands of the people engaged in the project and record-keeping is made as simple as possible.

The project is known as Boiteko. It is a Setswana word for self-help and self-reliance. It now has a pottery, a tannery, a brickfield, a garden, spinning and weaving, dressmaking, simple food-processing, brewing, limeburning, building and stone masonry, wood and water delivery by donkey carts, and photographic developing and printing. In the majority of these production groups, most of the raw materials are to hand in and around Serowe. There are hides and skins for the tannery, clays and glazing material for the pottery, local grains for brewing, limestone, wood to fire the brick and pottery kilns, earth for the brickmaking and manure for the gardens. Some of the mohair used in spinning and weaving comes from Angora goats reared by the Farmers' Brigade, the poultry originates in Serowe and vegetables and fruits used in the kitchen are grown in the garden. In most cases, techniques and tools of production are simple and were quickly mastered by the people in the project.

There were a number of reasons for establishing Boiteko as a co-operative. We could reduce capital investment per head if the participants in the project were sharing tools and equipment and if the various groups were able to use a single water supply. But, more especially, I wanted to stress the interdependence of a group of people engaged in a wide range of variegated production. I believed that, once villagers involved in such co-operative production found that their standard of living had risen through this type of cooperation, they would be more willing to work together in the communal projects which require a large co-operating labour force, such as dams, roads, conservation measures, and building new workshops. They would be ready to pool other resources to acquire equipment that they could not individually afford or which small, separate groups of brickmakers, dressmakers or tanners could not afford either. Individual efforts are simply incapable of lifting the rural poor *en masse* out of their poverty, and individual production will not lead as easily to participation in large-scale projects as co-operative production will do. The conscious involvement of village people in spontaneous capital formation is an important aim of Boiteko. Capital formation is an indispensable prerequisite of development and of a rising standard of living. If the ordinary working people are not involved in the creation and control of capital but are alienated from it, then inflationary wage demands

become an established feature of a class-structured society, in which the main dividing line is drawn by the way in which capital is controlled.

Diversification—as well as increasing production—is important to development, but what incentive does the seamstress, or a group of seamstresses for that matter, have to promote a tannery? Is the incentive in such a case as great as that of a diversified co-operative, engaged in, and recognising the value of, capital formation, actively generating employment, expanding markets by increasing employment, and interdependent in improving living standards?

During the last 18 months the earnings of individual members of Boiteko have increased from R4 to R8 per month. The share-out takes place either once a month or once a fortnight. Each production group brings to a central meeting place the proceeds of its sales. Production costs are deducted and the balance is put into a bowl on the floor in the centre of the room. A blackboard is used to show everyone the week's earnings and production costs of each group. The total earnings are added up and the share-out takes place according to agreed principles. Additional weighting is given for skills, longer hours and participation in capital formation.

Farmers' Brigade training will now be geared to setting up groups of farmers in villages who will divide their time between productive training in the Brigade (without earning) and production in their workplace. This principle is being increasingly applied to other types of Brigade training in Serowe and it is possible to see variegated production co-operatives emerging in small villages along the lines of Boiteko. In fact, the Serowe Boiteko's tanners are trainees of the Tanners' Brigade who are dividing their time between training in the Brigade and earning in Boiteko.

Boiteko will succeed only if—without abandoning the criteria of replicability—members' earnings can be raised to at least R15 a month over the next year or so, and gradually thereafter. Increased productivity depends on harder work, greater skill and improved equipment and techniques. If outside investment is used to buy new equipment, we abandon a basic and major criterion of replicability. Hence the need for the conscious involvement of village people in spontaneous capital formation. We wanted the members of Boiteko to see that to save now to buy equipment like sewing machines and looms, and to buy livestock, would increase earnings later. If new garden beds were dug now, then later the supply of vegetables would increase. To understand properly and fully that increased earnings in the future depended on savings now, people had first to grasp fully that their earnings depended on their own produc-

tion. That was a necessary link in understanding that their productivity would be increased by improved equipment.

The majority of Boiteko members work eight hours a day five days a week, and four hours on Saturday mornings. Discussions of matters like this are confined to evenings and most are anxious to be home by dark. Many are parents of young children. This limitation on discussion time forced me to recognize that most of the lessons would have to be learnt from practice and reality. The time available for discussions allowed one only to draw attention to, and point to, conclusions from the reality. What this meant was that certain practices and experiments in Boiteko were changed as the project developed, because the substantive, practical linkages to understanding the importance of capital formation were obscured by those practices and experiments. This question is discussed further and analysed in the chapter on Brigades. This experience brought home very strongly to me the importance to the learning process of harmony between theory and practice. It was to give me greater insight into my work at the secondary school.

Social justice

I have one final point to make before returning to the discussion of our aims in secondary education and our strategies for implementing those aims. It should be clear from the discussion of Brigades and of job creation for graduates of the Farmers', Textiles and Tanners' Brigades, and from the discussion of Boiteko, that I was constantly in the invidious position of having to explain and justify the inferior conditions of Brigades in relation to the school, and the lower levels of earnings of certain Brigade graduates in relation to people in the modern sector. Their resentment at the system focussed on me and the rest of us who worked on this frontier. Occasionally it embittered me. It made me realise that, if I was to be credible, then my own life-style should not too greatly contradict my message and my theoretical positions. This has radicalised my thinking considerably. A great deal of the work we do in respect of rural Brigades and the spread of Boiteko will take place in small villages. We cannot limit and contain the aspirations of the people there by tucking them away in underdeveloped villages and by hiding from them the glitter of urban life. Nor should anyone think that that is the aim of our programme. If society provides high rewards for trained people in towns and modernised development jobs and expects farmers and other self-em-

ployed artisans trained over equal periods of time to be happy with a great deal less, it will not succeed and no amount of "motivation" in isolation in villages will make it.

Warning signals in the School

I had always regarded the participation of students at Swaneng Hill School in voluntary work as some kind of rough indicator of their response to our efforts to change attitudes through educational reform. Some of the essays written by a number of students and various articles in the students' magazine that appeared over the years seemed to reflect a fairly good and widespread understanding of what the school was about. But, whilst this intellectual response was sometimes very gratifying, I preferred the more solid evidence of practical action. Participation in the voluntary work was also an indicator of the mood of the students. If there was a poor turn-out on a Saturday morning, it was usually a sign of some discontent and I would immediately try to find out the cause of it. Some time back I wrote:

> We have never used any coercion to get pupils to come to work voluntarily. Seeking to get a lasting and effective commitment from our pupils, it has been vital to get them to understand the need for, and value of, voluntary labour. Compulsion would, I think, probably produce a negative reaction.

Swaneng Hill School is situated on the eastern outskirts of Serowe, a village spread out over a very large area. During the first few years students had to walk quite long distances to school and it was impressive that they came to do manual work on Saturdays.

Later on we bought a five-ton lorry to transport the students to and from school each day and we soon found that, if the lorry did not go into the centre of Serowe on a Saturday morning, few of the students would come to voluntary work. As time went by and the school grew larger, the students needed more urging. For a while, I took this simply as one of the obligations of teaching. President Nyerere's *Education for Self-Reliance* was my favourite amongst many sources of quotations. But the most effective means of getting the students to work was discussion of the way in which the work had made possible the more rapid growth of the school, and the demonstration that, if running costs were kept down, a given sum of money could educate more students. The building of

Shashe River School helped to revive flagging enthusiasm, for a while, among Swaneng students. They seemed to be re-inspired, briefly.

After several years we found that quite large numbers of students never took part in voluntary work and some took part very infrequently. By then we had built dormitories and the majority of students were living there and could not claim domestic duties at home or the failure of the lorry as a reason for not participating. Lots of the students took to coming to work late; it was a bit disconcerting for a few of the more dedicated students, the staff and me, to find ourselves working alone for an hour or so. If we had not done that and organised tools and materials, the latecomers would have simply gone away again. I refused to do any of my other duties on a Saturday morning, because I felt that I should be willing to do at least as much as anyone else, if not more. I did not like the work more than anyone else, though I derived pleasure from working together in a crowd when there was a good turn-out.

Quite frequently, one would find students kicking a ball around all morning or playing games in the sight and within earshot of those working. It was a considerable distraction. Having made myself explicit about the voluntary character of the work, I felt uneasy, as Principal, about applying pressures which could be interpreted as coercion. The work was voluntary for the staff, too, and whilst most of them participated and several almost always, there were those who chose not to and some of them were on the look-out for signs of coercion. I do not enjoy forcing people to do what they do not want to do, in any case.

There were some other practical indicators of student attitudes. One such was the manner in which they performed duties such as cooking. From time to time, students on catering duties would simply not appear. Occasionally, half of a group or the whole group would not cook breakfast or supper. I usually insisted that all complaints and grievances should come before the student council and be discussed there and reported to me, if I was not present at a meeting. If students defected without presenting grievances in this way, it was a matter for disciplinary action—usually the deprivation of some privilege or benefit. The School Council was, thus, also a barometer of student feeling, because I encouraged complaints to be made to it, and I could judge from the frequency of complaints what the mood or attitudes of students might be.

By 1969, the indicators began suggesting that a very substantial minority of the student body did not accept or like the policies of the school and were reacting against the various strategies for implementing the school's aims. Fresh from my embroilment with Farmers' Brigade

trainees, I did not feel very sympathetic to their dissatisfaction, though I dealt with it as patiently as I could. I felt very strongly that students should do more work and enjoy less privilege. I had wanted the students to become more productive, making each less reliant on subsidies and therefore making grants and aid go further.

Rapid staff turnover

One of the greatest handicaps to achieving aims was a very rapid turnover in staff. We were very dependent on volunteer teachers on our secondary-school staff. Very few Batswana were in the secondary teaching service. At the time, Government was not in favour of recruiting Africans from South Africa. The volunteers came from a variety of different sponsoring organisations or by private arrangements and they came from several different countries. They stayed for two, and at the most, three years. The average length of stay was two years; a few came for a year and we accepted them when it seemed we could not find anyone else. By 1969, we had a large staff, and with a diversified curriculum we often had to take whoever was available in respect of certain subjects. New teachers took time to get to know the country and to become familiar with the school's aims. Most of the young volunteers were enthusiastic and they were also vocal. A number of volunteers were people of very outstanding character and ability and with exceptional dedication, but some who made close friendships with students were ready to give an ear to student grievances and took them seriously.

I might have had the dominant voice in formulating policy, but the implementation of the policy depended on the staff as much as on me. I could not make the policies work without their support.

The problems of applying a consistent policy with a rapidly changing staff, and my attempts to solve them, are shown in the following extracts from a paper I presented to the staff in September, 1969.

One of the problems that has much pre-occupied me over the years is how to get across the ideas and policies of the school to a rapidly changing staff, with a substantial number of new people here at the start of each year, and most staying only a year or two. My own ideas have been developing over the years and it is of considerable importance to keep people informed of evolving ideas and new developments. Generally, I have always recognised that there would be a greater staff commitment to policies and their implementation, and a more enthusiastic involvement in activi-

ties that implement policies, if people not only understood and accepted them but felt able to make suggestions and put forward ideas.

This year I have been much pre-occupied with devising means of keeping staff informed about policy and giving them a formal system of presenting views about policy and implementation. There are various factors that have to be taken into consideration and balanced against each other in devising appropriate systems to achieve this purpose. Frankly, I don't think that basic policy here can be determined by a majority staff vote. At the simplest level of viewing this, frequent staff changes rule it out, because we might then have a policy turnover to match staff turnover. I think, too, that in general people from overseas are best able to make informed judgements about overall policy when they have been here for a while and are able to gain a sufficiently broad perspective of the national context.

I am not sure, in any case, that overall policy ought to be entirely and exclusively for the staff to decide. Clearly the Government and the people must have some voice in this, though I am dubious whether—as in our present Board of Governors—the parents of those lucky enough to have got into a secondary school should have so large a say. This tends to give the privileged too great a say about the extent of their privilege. Apart from these considerations, there are various reasons why, in the present circumstances, the Principal must retain within the institution the last word about overall policy and even about other matters. For one thing, he is held responsible for the running of the institution and for policy by the public, the Board of Governors, the donor agencies, the Government, and, specifically, the Director of Education. In this particular institution we have fairly well-defined policies, in the shaping of which I have had a very dominant voice. I cannot believe that policies would have developed as they have if I had merely allowed a free staff vote on policy over the years. But, on the other hand, I want to acknowledge that in my thinking about policies I have benefited a great deal from having the views of quite a number of those who have worked with me.

It is important, therefore, to create a system for staff to present their views, not only to enable them to feel involved, and so make their participation more enthusiastic, but also because it is of very great value to me to have the ideas of staff who are involved in our policies and their implementation. The emphasis might be on staff participation rather than on staff democracy.

Seminars for staff and for students and Brigade trainees

In 1969 and 1970, staff seminars were held at Swaneng Hill School in which almost all the staff members of Swaneng Hill and Shashe River Schools and their associated Brigades participated. We discussed and analysed the policies and aims of the school and the Brigades, setting them against the background of the society in which we were living and working. We considered the relative roles of school and Brigades in the national context. We discussed, too, the strategies for implementing our aims. In each case, the seminar lasted two days and the discussions were frank and probed quite deeply, locating some of the weaknesses in the implementation of strategies.

After the seminar we established four standing committees each concerned with a particular topic, like Work in the Community, the Curriculum, Student Activities, and Discipline and Organization of the school. All new ideas and proposals were referred to these standing committees, and they themselves came up with proposals and ideas of their own, from time to time.

Following the first staff seminar, a joint seminar was held for Swaneng Hill students and Brigade trainees, at which they, too, looked at the policies and aims of both school and Brigades, against the background of society, and where opportunities were created to discuss the strategies for implementing aims. The proceedings were throughout conducted in Setswana and, as in the case of the staff, there were discussions in groups of about 12, as well as plenary discussions. The group discussions focussed on a number of points and questions. Again, a whole weekend was devoted to the discussions. Shashe River School had its own separate student and Brigade trainee seminar.

By the time that the first staff seminar was held, I was advocating that the work previously done by students on a voluntary basis should now become compulsory for everyone. I was also critical of some of the student attitudes. I put these views at the student and trainee seminar as well. The following extract from a paper I wrote in 1970 states my case on these questions.

I have observed, in my seven years here, how the classroom and academic work have their own momentum and what effect they have on the attitudes of students. The academic tends always to have a reason why he should not engage in labour and productive work. There are examinations, of course. But, if we remove that, there would be his study. There will also

be the need for cultural pursuits and debates and, of course, sport. Although the students voted overwhelmingly in favour of taking over the school garden, a substantial proportion persistently absent themselves. I am not sure we can really claim that voluntary work is successful. We have got some great monuments to it, in the laboratories, the hall and the sports fields, but whether it is a living ideal in the minds of most students I am not certain. It seems to require ever-greater effort to keep it going. Were it not for the persistence of people like Otsogile Pitso, Martin Kibblewhite—who frequently felt the weight of keeping it going—and, I suppose, myself, I am not sure that it would have survived at all in the life of the school. There are, admittedly, several members of staff here now and quite a few students who are enthusiastic about voluntary work and the policies of the school, but these students will be the first to admit that they are in the minority.

One of the side-effects of teaching practical skills—I had hoped—was to make the lessons of development studies about production more meaningful. I still believe that the school in a rural area is a power-house of the talents and skills of both the staff and the students. Perhaps there are some who might think that manual work ought not to be compulsory. My own view is that, if work is necessary, then it must be shared by all. If, by effecting cost savings in the building and running of the school, we can admit increased numbers into schools, we can demonstrate from this an interdependence of students on each other through work in the school. Without the work there would be fewer students in the school. Those who opt out of work are denying the opportunity of education to others; perhaps they are the ones who should be deprived of it. Why should students who never assist in building be allowed to use facilities provided with money saved by the work of others? If students' fees cover much less than half the running costs, then clearly their education is being subsidised—by the state and in donations from abroad. To raise earnings and living standards in the community through rural development will in due course make more money available for education from the community—on which the school is dependent. If all this is true, then we must clearly recognise that to allow people to opt out is to destroy the interdependence that makes it work. To continue with voluntary work puts an intolerable and unfair share of strain and work on the part of a dedicated few—from which others draw unearned benefits. This is exploitation.

In my view, the more cost-saving work that students do, the more they are productive, then the more we shall be able to expand schools for increased enrolment. Secondary schools are expensive institutions. Even in

our own two schools, where costs are kept as low as possible, with a total—in both schools—of 860 students in 1970, the total running costs that have to be paid for in cash amount to R151 000, which means a cost of R177 per student per year to run the schools.[1]

Not for one moment do I believe that the opposition of some of the students to manual work is a reason for permitting the exploitation of the dedicated minority that voluntary work constitutes. When the work is compulsory, there is a debate among nearly all the students, because all have something to think about, whereas voluntary work makes it possible for most to ignore the discussion and encourages apathy. The debate should be encouraged—provided students are made to do the work, and provided irrational argument and untruths persistently used as a means of sabotage can be rigorously dealt with. The trainees of the Brigades have no choice in whether they work or not. They have to or the Brigades close down.

In my view, compulsory work confined to the school will be of as much social value as the work sports-club members do in building their club-houses. Service and work in the community is essential not only because development in the community is a good objective in itself, but because the commitment to the community depends on constant reminders of the realities of underdeveloped rural life.

The emerging nations are not going to develop their economies without a great deal of productive work; much hard manual work is going to be necessary in the process. These countries cannot afford machines to do this task. What President Nyerere says of Tanzania is valid for Botswana and will remain so, despite mining developments.

> And the truth is that our ... republic has at present a poor, undeveloped and agricultural economy. We have very little capital to invest in big factories or modern machines; we are short of people with skill and experience. What we do have is land in abundance and people who are willing to work hard for their own improvement. It is the use of these latter resources which will decide whether we reach our total goals or not. If we use these resources in a spirit of self-reliance ... then we shall make progress slowly but surely. And it will be real progress, affecting the lives of the masses, not just having spectacular show-pieces in the towns, while the rest of the people live in their present poverty.

The developed countries are rich enough for the manual workers to be paid, and paid quite well. But there are not enough resources in the undeveloped countries to pay even low wages to the vast army of workers

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[1] The capital cost per student of building Swaneng Hill School was, in 1972, R660. The recurrent and capital costs per student for both schools are shown in Chapter 4.

who will be needed to undertake the necessary tasks of development. In emerging countries the leadership must either force the ordinary people to work or they must join them and lead them.

In *Education for Self-Reliance*, President Nyerere had this to say about isolating students from their communities by gathering them in large numbers in school dormitories: "The few who go to secondary schools are taken miles away from their homes; they live in an enclave, having permission to go into the town for recreation, but not relating the work of either town or country to their real life—which is lived in the school compound."

The existence of large dormitories has the negative effects of (*a*) increasing the capital and recurrent costs of education, and (*b*) isolating students from the community; the very isolating effect is a contradiction of the policy of inculcating commitment.

The organisation, life and policies of the other schools have a most profound effect on our students. They are well aware that in few other secondary schools do the students cook for themselves, build classrooms or participate in manual work. Whatever means we have used at our schools to achieve our aims, we have had to function within an existing pattern of secondary education, and within an existing socio-economic set-up, and this has created contradictions. While the school tries to promote ideals of service, commitment to the rural poor, and the need for productive work, our efforts are undermined precisely because students are aware that, if examination hurdles can be taken, there are lucrative opportunities in the Civil Service and other areas of the modern sector awaiting the cleverest and the most studious. Manual work is resented because it takes two hours of study time a week, though sport, which may demand much more time, is accepted.

The large institutions we are creating at Swaneng and Shashe are, whether we like it or not, islands of privilege as far as the community is concerned. The students cannot fail to sense that their admission into secondary school is an initiation into a closed circle of privilege. Thereafter, provided their studies are well done, they will live comfortably, feed well, and be relieved of carrying water and the many manual chores of home. Indeed, the better they are in examinations, the greater the rewards that lie ahead. They will argue that these are the just due of their hard academic work; but the reward—on the scales at present maintained—would only be fair if others willing to work as hard had the same opportunity for education; and if those who were willing to work hard with their hands could have rewards for their efforts proportionate to the

rewards of the academically gifted. Incidentally, we teachers, who live relatively well in our large institutions, are, of course, handicapped, on that score, in criticising student attitudes.

It is probably quite normal that the students at present living in a situation which puts them at advantage, and being prepared for a privileged future, should be preoccupied with the extent of their advantage now. They compare their conditions with those at other secondary schools. Their criteria for comparison are the quality of food, who does the cooking, serving and cleaning, who provides the fuel, who keeps the premises clean, the amount of fees paid, the arrangements about owning textbooks, whether uniforms are standard or not, how much opportunity there is for sport and travel and a whole lot of other trivia. Of course, someone may say that young people cannot be expected to have correct attitudes straightaway; they have to be taught. But the truth is that, by establishing privileged enclaves, we are in fact encouraging the very pre-occupations among students that we later try to alter.

Our efforts to integrate Brigades and School are part of our efforts to inculcate better social attitudes among the students. Shashe has succeeded much better than Swaneng in the attempt at integration. As much as we may hope to reduce student status-consciousness and counter student elitist attitudes, by mixing the population of Brigades and School, there is also the danger that the association may work to the disadvantage of the Brigade idea: Brigade trainees may demand standards and conditions similar to those of students. We are, I am sure, all aware that Brigades could no longer cover costs if this happened. I wonder if we really counter elitist attitudes by having Brigades and School mix at meals and in football matches, while the content of the Brigades and School are so radically different. We need some other word than integration to describe the present relationship between School and Brigades. Perhaps "contiguity" is the word and perhaps what we really need to aim for is a confrontation between school and Brigades. But this depends on having a successful and expanding Brigade programme, in which the trainees see themselves as pioneers of an idea of more widespread relevance and application to the dispossessed young than the exclusive secondary school directed at minority privilege; this necessitates Brigade commitment to, and acceptance of their programme in the wider interest, and then an effective challenge to systems of privilege, such as the secondary school as now organised in Botswana. When the students' programme includes a greater proportion of productive work, then a meaningful integration may become possible. But until that happens perhaps Brigades and School should be run alongside

each other, within sight and shouting distance of each other, awaiting the time for integration.

Things fall apart

The discussion of compulsory versus voluntary work continued in the months that followed the first staff and student/trainee seminars. A majority of the groups into which the student and trainee seminar had been divided reported back as being in favour of making the work compulsory. Thereafter, the staff standing committee on Work in the Community came out in support of compulsory work. At the staff meeting which later discussed their recommendation, there was general agreement to it.

Manual work was made compulsory but subsequently opposition to it grew amongst the students, especially the senior students, who also began demanding better conditions in the school. The fifth formers began boycotting manual work. When work was still voluntary, it was always accepted that, as final examinations approached, fifth formers were not expected to participate and were in fact discouraged, and this would have applied to them. They began boycotting well in advance of the usual release time. Other students, too, began boycotting.

We had, at the moment, been granted R100 000 by a German organisation to construct new buildings and purchase equipment to enable further expansion of the school. That grant, like much of the money that had been given us, was given in recognition of the policies and aims of the school, and the cost-saving activities in which the students had always participated. I asked the school, at assembly, if we should now make it clear to donors and other friends that we were thenceforth changing our policies and abandoning the methods which had earned us our support until then. I made it clear that for me it was a matter of honour, because I had the responsibility of raising the funds and had presented abroad a picture of the school which was now proving false. It had a salutary effect for a while, but before long some of the senior students resumed their opposition and began trying to initiate a boycott of compulsory work. The actions of these students made deep inroads into my own dedication and, motivated by a mixture of exhausted despair, anger and frustration, I conducted a personal campaign against elitist attitudes in the school, culminating in a slogan demonstration. I felt, however, that after such "unprofessional" behaviour I should offer my resignation as Principal and accordingly did so, though it was not accepted by the Ministry of

Education. There was, ironically, a demonstration by the students asking me to stay on.

Immediately after this, I took two weeks' holiday. Sheila Bagnall, the Vice-Principal, acted as Principal and during the next two weeks there was a series of discussions between a group elected by the staff and a group chosen by the students. Certain agreements were reached, including a decision to retain compulsory manual work only in the school. Work outside the school should be voluntary.

Many months later there was an interesting sequel. One of the senior members of staff had organized a one-day seminar for senior students, at which, amongst others, I spoke. During the morning the participants had been willing to applaud a radical analysis of society and to adopt radical postures. In the afternoon, when the implications of a radical general position came to be discussed and analysed, and the role of students pinpointed, the students all walked out of the seminar in protest. They said that they had been "manoeuvred" into support of compulsory work at the previous seminar and that they were afraid that they were now being "manoeuvred" again into support of some new rigorous measure or other.

In an earlier attempt to deal with growing student opposition to our policies, I had held several meetings with senior students, giving them an opportunity to question me freely on any topic they wished. While there were some very good, reasonable and thought-provoking discussions, it soon became clear that a few of these fourth- and fifth-form students had closed their minds to reason about the policies of the school. They simply refused to believe the figures I gave them in response to demands for better conditions, relating to the costs of feeding and accommodating them, of providing water and lighting, of transporting day students to school, and of procuring books and equipment. They had gained a new dimension of self-interest and these facts had become as unpalatable as the maize meal which was their and everyone else's staple diet had now become. I had met this unwillingness to reason before, among some of the Brigade trainees, and I knew now how difficult it was to deal with. The reasonable people clam up for fear of being identified with authority.

More diagnosis and a bit of tinkering

My slogan demonstration took place in mid-1970. Though things had gone badly wrong, I was not yet ready to give up. I did not think that the damage was irreparable. We had always been willing to search our

souls, to admit mistakes and to re-assess goals and methods. We had already identified some of the obstacles to achieving our aims, and we could perhaps do something about getting around them. We were trying to find ways of solving the problem of rapid staff turnover. At the second Swaneng/Shashe staff seminar I had been warned of the dangers to our policies of growing too big. By 1971, Swaneng had nearly 600 students in the secondary school, and increased enrolment was planned to continue. Some 30 people were involved full- and part-time in teaching. Nearly three-quarters of the staff had been there no longer than two years and only about six had been there for more than three years.

I had made reference at the staff seminars to the obstacles to achieving our aims presented by the difference between what we tried to teach the students and what they learned from society. We had tried, perhaps, to do too much in isolation. Our contact with parents had been minimal. The State President had often spoken in public in support of some of our aims and methods, but frequent personnel changes in the Ministry of Education hampered several earlier attempts to obtain a closer involvement of the Ministry with the school.

In subsequent negotiations with the Ministry of Education in late 1970, I secured their support for some elements of policy, namely, the diversified curriculum, including practical subjects and Development Studies. They also supported student participation in their own catering arrangements but wanted greater staff assistance and supervision. It was also agreed that students should be involved in productive and construction work in the Brigades and in the school, though work in the community should be voluntary. In addition, a new Board of Governors was set up, with appointments fully controlled by Government and the local government authority. I had hoped for parent, staff and student representation, but I had to submit to the Ministry's wishes, because I could no longer find grants to keep the schools going and Government had agreed to take over the burden of meeting recurrent costs not covered by fees. Fears were expressed by staff members and others that this bureaucratic superstructure would be restrictive of experimentation. I had myself reached agreement with the Ministry about the constitution of the Board and there was a tacit understanding that I would be the Co-ordinator of the Board. I defended the superstructure we had created, saying, that

> to make our policies effective in their aims depended not only on what we did within the school, but on the influences of the society outside as well . . . it is not possible or desirable to take forward the Swaneng experi-

ment without strong Government backing and eventual changes in their overall policies. And to achieve this means persuading and convincing the Government and compromising where necessary.

I saw the agreement with Government as a beginning of this process and a machinery for dialogue. I believed that, if we could achieve a greater harmony between society's goals and the goals of the school, we might overcome the disadvantages of size.

The Minister of Education visited the school and addressed the assembled staff and students, expressing support for the aims on which agreement had been reached with me. There seemed plenty of reason for renewed hope and I was certainly willing to try to make the new arrangements work. We planned to start a new school at Mahalapye, which might revive some enthusiasm amongst everyone.

The case for compromise

During the year that followed, I played my part—as Co-ordinator of the Swaneng Board of Governors—in the new arrangements. I tried to pursue the basic goals that over the years I had worked out for the school, within the framework of the new machinery. If I had previously seen the difference between what the school taught students and what society taught them as being a major impediment to achieving our goals, I was now pinning my hopes on dialogue and persuasion—through various channels, including those opened up by the establishment of the Board—to effect a change in the lessons that society taught. It did not, at the time, seem totally unrealistic or totally unattainable. The Government was moving towards a quite radical rural-development policy; there was soon to be a White Paper on incomes, which recognised that social divisions based on incomes presented problems for rural development; and it promised corrective action. I was given several opportunities—outside Board channels—to present my views on these matters to both the political and the official sides of Government.

I had to make compromises during that year, to accept some watering-down of aims and even of the methods of implementing them. I was afraid that Government's rural-development and income policies would not go far enough towards the harmonisation of the "two legs" of the dual strategy of "modernised" and "replicable" development; or—if the declarations of intent were satisfactory—that the practical application might fall short. Compromise and co-operation have their merits and their rewards. Perhaps if I was patient and continued to put my case

clearly and persistently, if my own life-style was reasonably consistent with my posture, there could be a steady evolution of Government policy towards greater harmonisation of the "two legs". In time, too, we might have persuaded the Ministry of Education to include representatives of parents, staff and even students, on the Board. Maybe we could have achieved the application of some of the aims and methods of Swaneng Hill School throughout the school system. Each of the various methods I have described earlier in this chapter could be examined on its merits and some could be applied almost immediately throughout the system.

Re-assessment

There were also arguments for going it alone, but they pointed along a lonely and difficult road. In late 1971, I began a more thorough and further-reaching process of soul-searching, re-assessment and re-examination of aims and methods than I had ever before undertaken. Increasingly, it seemed to me that the fundamental reason for our lack of success at Swaneng Hill School was that the dominant ethos of society and the aims of the school were at variance. But I had not sufficiently thought this question through or drawn the right conclusion from it. I had never defined *precisely* what I should or could expect from students of the school after they had left it. What sort of jobs would they find? Did I seriously expect them to renounce the lucrative job prospects beckoning to some of them? Did I expect them to demand pay-cuts? Did I expect them to go out and initiate rural-development projects? Or to start voluntary work projects and participate in them? Or to join voluntary organisations? Or was I satisfied simply with providing them with an orientation, an outlook, and a motivation which would inform their actions, as opportunities arose for them to influence events? Perhaps the most we could expect of our efforts was that our students might be a leaven in the society they were entering. Ought I to have recognised that we might really have affected the actions and thinking of only a few and been content with that?

As students progressed through the school, they became increasingly pre-occupied with their future outside of it and with their assessments of their future prospects in society. If they did at any time gain an understanding of the school's aims, there were various challenges to that understanding. One such challenge was the style of other schools. More important was the extent to which they saw the aims of the school as improving or affecting their future job prospects, the key to which was

examination results. The more the school's activities appeared to undermine their future prospects, the more irksome they would find those activities. They might possibly accept those irksome features of the school only if—and for so long as—it was crystal-clear, obvious and credible that they were the absolutely essential conditions of getting an education—rather like professing a faith was a condition of getting an education at some mission schools. In Swaneng's early, struggling days, that message was clear, but it became increasingly obscured by size and apparent durability, as the school grew bigger. In the fourth and fifth forms, the increasingly dominant influence on the students was the reality of life outside the school. This much had always been obvious to me, and we had always been obliged to take the examinations seriously, as a school. While it may have been obvious that for parents, as well as students, the economic function of the school was its most important function, I had not always drawn the correct conclusions from it.

It is *almost* entirely true that the school can only reflect the goals of society and cannot greatly alter them. Therefore, in considering what the students were likely to do upon leaving, we should, to be realistic, have modified our aims and methods accordingly. This approach might have fitted in well with a policy of compromise and co-operation within the machinery provided by the new Board of Governors.

But whilst it is almost entirely true, it is not, in fact, completely true. To begin with, Swaneng Hill School constituted a "pressure group" which did achieve, and contribute to, quite considerable changes of official policy on several matters. So did the Brigades. And while there is a dominant ethos which the conventional secondary school faithfully reflects and serves and which permeates everyone's thinking, there is a sub-culture, comprising the rejects of the process of modernised development, in which attitudes are ambivalent towards that process. For the people down below there are no clear prospects of lucrative employment; there are only aspirations. These aspirations are modified as the realities of their lives come to dominate their consciousness. This means that there is a fairly large section of the population who will accept Brigades and Boitekos, provided reasonable minimum wages can be earned through their agency.

A new approach to employment and education

There was a very clear lesson in all this, in respect of the whole attempt at secondary-school reform. At Swaneng Hill School, as much as at other schools, we were producing intellectuals inadequately fitted for produc-

tion, and largely dependent on their school certificates. We recognised the importance of job creation for certain types of Brigade trainees, but the future of the school students we left in the hands of the civil service and the private employer. In general, and in the long run, that dependence would shape the man much more than any information we had put at his disposal; and if any students did question their circumstances, they would soon become reconciled to their privileges and to the fact that there was very little individuals could do about the society they lived in.

We might have a chance of making our educational reforms work if we could follow them up by creating jobs in employment structures which were in sympathy with the aims of the educational reforms. Production co-operatives, perhaps, provide examples of such "sympathetic" employment structures. The students employed in these would be independent, directly engaged in production and in a position to do something practical about promoting development and creating employment for others.

I can think of two possible approaches to this. One I had had in mind for some time previously. I had written up a proposal for a cost-covering school, applying the lesson of the Brigades. The students would spend half their time in production and half in academic learning. They would learn a skill, very well and intensively, through doing the work, as well as learning the theory, in a range of activities, such as engineering, agriculture, food-processing, construction, furniture-making, printing and publishing, tanning, and soap-manufacturing. After the students had trained, they would be helped to set up co-operative industries.

Alternatively, the production co-operatives could come first. This might mean setting up a small cement factory, an engineering works, a furniture factory, a coal by-products or a plastics-moulding plant, a design centre or a brewery, to cite a few examples. The members of the co-operatives could then attend lessons in an academic centre financed by the various co-operatives. Which of the two alternatives is better, and why, is discussed in Chapter 4, along with some logistics of both operations.

Would there not be demands for higher wages in these co-operatives? There might well be, but, as in Boiteko, the members would control the capital and the management; they would be taught the importance of capital formation. They would learn the relationship between earnings and production, and learn that increased earnings depend on higher productivity, which in turn depends on harder work, greater skill, better

techniques and continuing capitalisation in the shape of new plant. The Development Studies lessons would be coming to life.

The functions of education

When people talk about schools and education, they often fail to recognise that they are in fact also expressing attitudes about social, economic and political questions, and that they are disguising the views they express on these matters. The professional educationalist can and often does also fall into this trap. Schools, of course, have a teaching function and there are varying professional views on how they can best perform this. There are those progressives who might prefer to describe this function as creating the opportunity to learn.

I have come to feel that it is important, if one is to talk constructively about schools, especially in a young emerging country, to try—if one can—to isolate this function of teaching (or creating opportunities for learning) as much as possible from the other, often concealed functions of schools, which involve economics, politics and social issues, and which include custodianship. A total disentanglement of the various functions may not be possible, because different approaches to the teaching function may be motivated by different political outlooks. Despite this, I do feel that it is possible to recognise certain broad and distinct—though interconnected—functions.

At Swaneng Hill School our freedom to experiment in various directions was restricted, because students (backed by parents) wanted the school to help them achieve their economic aspirations. School is the gateway to privilege and entry demarcates for most the border-line between well-being and neglected stagnation in a rural village or an urban slum. The parents of secondary-school students usually include the most vocal and influential people in a poor community, who are vigilant not only about examination results but also about good manners and correct behaviour, feeding, custodianship and accommodation, building standards and prowess in sport, to name some of the main preoccupations. Governments respond to the vigilance of the influential and vocal minority more than to the silent, deprived majority, and we find a tremendous concern, not so much for the purely teaching functions of the school as with these other functions. On many occasions over the years we were suspect at Swaneng Hill over one or another of these. Discipline was said to be poor, appearances slovenly, buildings unsafe, food and accommodation poor, sport neglected. The Ministry of Education banned thatch roofs

because maintenance costs were "too high". Thatched rondavels were cheap, solid, airy, well insulated, commodious and attractive. But every 15 years it might cost R70 to replace a roof. Rondavels were easy to build and students could put them up by voluntary work for perhaps R300 and they would sleep six comfortably in double bunks. The labour and raw materials were local. This kind of argument about maintenance is a direct importation from developed countries and makes nonsense in a country like Botswana, where wages are so much lower.

If we could dispose of these non-pedagogic functions of the school, we might find that we could cope with the function of creating learning opportunities, and the processes of the mind involved, at infinitely less cost than schooling, at present organised with all its other functions, entails.

I would argue that, by establishing an academic centre, either in a cost-covering school or to serve a group of production co-operatives, we would in fact help to dispose of these other functions.

None of what I have said so far has been intended to deny the importance of secondary and higher education. Every developing nation requires a certain proportion of people whose training will be long and intensive, such as doctors, architects, engineers, veterinary surgeons, agricultural and industrial research workers, administrators, central bankers, development planners and rural innovators.

The main economic justification for the expensive academic functions of the secondary school is no doubt that they are a necessary part of the training, not only of top-level technicians but also of the professional men: the entrepreneurs, organisers and managers, the administrators, the executives, the bankers, the teachers, the extension workers—in fact, all those in the public service, in industry, in agriculture, in commerce, and in transport and communications who provide leadership for development.

Laying the groundwork for further technical training, in schools, requires the introduction of certain scientific, commercial or technical knowledge or skills. There are other qualities that need to be developed as well. In one of my earlier papers, while suggesting what some of these qualities might be, I asked if they could be taught or improved by teaching in schools.

Intelligence is clearly inherent and while initiative, the ability to discriminate and to reason, and original thought are bound up with it, all these qualities can be improved through education. Being well-informed

also depends primarily on education. Young people can probably be trained in reliability, self-discipline, self-confidence and organising ability. Integrity, moral courage and enthusiasm can possible be inculated; so, too, possibly can compassion—and through it—dedication and commitment and tolerance: qualities which make leadership at all levels sounder, wiser and more humane. Certainly the ability to communicate with others can be improved by education.

Some of these qualities could doubtless be learned in Brigades, not in formal teaching situations but by virtue of the responsibilities thrust on trainees for running their own affairs. But, in general, those qualities associated with mental processes and those based on a foundation of knowledge are probably best learned from academic work. Of course, there will always be exceptional individuals who can make the most of scanty education to develop their talents, for whom the limited education of the Brigades will be quite enough to take them further.

Mathematics does help to teach precision and it helps us to organise our thoughts. Science helps us shape our view of the world and our attitudes towards our environment; it gives us mastery over our resources. Speaking for myself, I have no doubt that I am a more compassionate man because of the impact on me of the deeper appreciation of English literature that came to me through study.

I by no means reject all of this, but I am now prepared to—and do—argue that, if schools were freed from their non-pedagogic functions, a greater re-organisation of curricula would be possible, more related to the realities of life of most students.

If the academic centres supported by industrial work can be made to work, there seems to me no reason why we should exclude the possibility that some of their students might go on to further study and even leave the factories. The main purpose will have been attained if a majority of the workers or students stay on in them. And that will depend on expanding production.

Changing realities

For the time being in Botswana, most secondary-school leavers are able to find work. As far as most students and parents are concerned, secondary education serves its purposes well. People do not want to change or reform it; they want more of the same. In time, I suspect, possession of a school certificate will no longer guarantee everyone employment, unless the planners can succeed in restricting the establishment of

more secondary schools than are needed to fill the jobs that conventional development processes create. I suspect that political factors will prevent them from doing this. There will be a shortage of jobs. In that event, people are still likely to look upon the certificate as the necessary lottery ticket for the few jobs available. But I also think that there will be a climate of opinion more favourable to reform.

I want to anticipate that change of mood. I think we should be prepared for it. We can now prepare, I believe, by creating workable models of reform. And I think that the new approach to employment and education briefly described earlier will provide the framework of such a model.

The path of compromise and co-operation within the formal system had beckoned and it would have had its advantage. But I believe that I have now found a way of seeing through the whole experiment of educational reform, related to its after-life. Pursuing the "alternatives" in education may seem to be a more difficult course than working in the system; there were enough difficulties for me in that, as these pages have shown! But I believe that the "alternatives" will yield better results, in terms of the basic goals I set myself, and as a service to a young, emerging country, than tinkering with the system will do.

It was this kind of reasoning which in the end decided me to quit as Co-ordinator of the Swaneng Board of Governors. I had asked the Board to transfer control of the Serowe Brigades to a new Serowe Brigade Development Trust, and this was agreed to. (The Brigades at Swaneng Hill and Shashe River had been brought under the control of the Board to promote "integration" with the school—a policy now recognised by both school and Brigade authorities as inimical to both.) In future my work would be with Brigades and Boitekos and in trying to develop new approaches to employment and education.

I asked the Minister of Education not to re-appoint me as Co-ordinator when my term ended on 29 February 1972. After ten years of work there, I completely severed my connections with Swaneng Hill School.

I have no regrets, no rancour, no nostalgia. There is too much to be done. And I learnt a thing or two which might come in handy for my future work.

CHAPTER 2

The Strategy for Development

In Chapter 1, I showed how my experiences led me to question the goals and processes of modernised development, and how the reading and enquiry that this prompted brought me to advocate a harmonised dual policy of modernised and popularly-based development. This, I suggested, was the ideal strategy for rapid economic progress with real social justice. It could most effectively and quickly create widespread employment, raise living standards generally, improve social services, and improve the quality of life of everyone.

The respective roles of each of the "two legs" of development, the strategy for co-ordinating and harmonising the two, and the techniques of popularly-based development chosen depend on an assessment of the conditions in any particular country. In each country, we must assess the state of the economy, the existing natural resources, and the growth potential of the modernised economy. We must assess the availability of power, tools and machines, and the levels of scientific and technological progress. We must also consider the state of the educational system and its capacity for growth. We must consider the willingness of the people to accept change and we must analyse what they understand by change.

At its lowest level, rural and popularly-based development may be seen simply as an essential complement to modernised development, to provide food and raw materials, to provide marginally increased employment and a greater demand for industrial products, and also to help to provide a little additional capital for further national growth. An emerging country would be justified in relegating this "leg" of development to such a low role only if it could be demonstrated that all its possible various techniques—more especially in respect of employment generation—had been considered, tried and proved unworkable; and that available resources would be most sensibly used on modernised development or in concentrating on a progressive minority in rural areas or only if it could be shown that a high proportion of the labour force was now absorbed in employment, directly or indirectly, in the modernised sector of the economy. It would then also need to be

shown that the growth and expansion of the modernised sector were such that the number of unemployed, and especially of the unemployed youth, were, or soon would be, actually and rapidly decreasing. If these arguments could not be sustained, then the other "leg" must have greater attention and priority in relation to modernised development.

Modernised development

We need to take a look at the workings of conventional modernised development in Botswana and assess them against the conditions in the country. I should like to look at what modernised development claims it can do, at what it actually achieves, at what it fails to do, and at what problems it creates.

Modernised development is not confined to urban areas, for there are pockets of it in the rural areas too, and there are also differences in earnings and capital holdings in rural areas. Likewise, labour-intensive approaches are not confined to rural areas, and urban slums can be seen as a direct result of rural stagnation.

Employment and rate of growth

The rate of growth achieved by modernised development is nearly always impressive. That constitutes its major achievement and justification. We have ample evidence of this in our Brigades in Serowe, where Serowe Engineering and Serowe Electrical make profits far above those of any of the other Brigades. The high growth rate provides the main argument for further concentration of all available investment in modernised development on the grounds of its multiplier effect. However, very large sums of capital and advanced skills are necessary for mechanised technology. Each new workplace in modern industry costs, on the average, between R3 000 and R4 000. A country like Botswana is heavily dependent on expatriates (which, because we are in southern Africa, creates special problems). Usually, wage levels are high and inflation is common and leads to pressure for wage increases. Capital is generally from outside the country and investors demand high rates of return on the grounds of risk.

How well is the multiplier effect likely to work in Botswana? Table 1 gives a *very rough* picture of the numbers of people who are likely to be looking for work at different points of time in the future, and this will, at least, show us the possible dimensions of the employment problem. (No one can estimate how many people will be working in neighbour-

Table 1. *Projections concerning the labour force in Botswana*

All these projections are based on the proportions established in the 1964 census.

Year	Population	Total labour force	Absentee labour force in neighbouring countries			Resident labour force		
			Total	Male	Female	Total	Male	Female
1964	543 000	285 000	35 000	28 000	7 000	250 000	125 000	125 000
1970	648 000	340 000	40 000	32 000	8 000	300 000	150 000	150 000
1975	750 000	394 000	48 000	38 000	10 000	346 000	173 000	173 000
1985	1 000 000	525 000	64 000	51 000	13 000	461 000	230 500	230 500
2000	1 600 000	840 000						

ing countries in 1975 or 1985—probably a lot less than indicated here. Nor can we be sure of the proportion of the population that will be in the labour force, as the population is getting younger. But at least we have some basis for comparison.)

At the moment there are some 50 000 people in paid employment in the modern sector. After public and private investment of about R180 000 000 (mining development and infrastructure), the most optimistic estimates are that 70 000 people may be absorbed by 1975. The total potential resident labour force will probably exceed 300 000. This, of course, includes women, whom some planners and statisticians may discount. That would be to ignore the enormous potential contribution of women to production and development. The employment capacity of the modern sector would have to grow at 10% a year for another 10 years to achieve an employment figure of 170 000 out of 450 000 willing workers in 1985. Something like R500 000 000 would be needed in investment. Can such a growth rate of employment capacity be maintained for so long? Experience in some other emerging countries suggests that the modernised economy can absorb an additional 0.5% or 1% or 1.5% of the labour force each year, while the labour force itself grows at 3% or more each year.

It is true, of course, that an additional proportion of people will be in employment—salaried and self-employed—as an indirect result of modern sector development. There are, too, the people who "manufacture for, sell to and service the bulk of the population, for most of whom productivity and wages are low". They are not very numerous in Botswana, however.

There is, then, some evidence for thinking that, if employment creation is left simply to the processes of modernised development, a lot of

people are going to be unemployed and underemployed for a long time to come:

Aspirations and attitudes

In Chapter 1, I noted that modernised development arouses ambitions amongst a great many people which its capital-intensive methods and high living standards prevent it from satisfying for all but a few. Aspirations aroused and frustrated lead to dissatisfaction with alternative prospects in rural areas, though these aspirations may be modified by acceptance of the realities. Nevertheless, there are continuing inimical influences, such as advertising and the supermarkets.

According to the Botswana Ministry of Finance and Development Planning, the average *per capita* rural income is about R35 per annum. "The modal rural income is well below this, due to the concentration of cattle wealth in a few hands . . . To put this rural income in perspective, it is important to note that more than half this income was received in kind and has been conservatively estimated at local market prices." The modal rural income can probably be reckoned at R25, so that an average rural household, which includes eight persons, will have an income of R200 per year. "This compares with the average non-agricultural wage of R509", which almost certainly supports less than eight people, on the average.

Advertising and the trader catering for conspicuous consumption both put enormous pressures on young people, and consequently their families, in rural areas. Most of the wares offered originate in modern factories (in Botswana's case almost entirely in South Africa). This is inimical to rural-development projects, like Brigades and Boiteko, which struggle to find markets for their produce. The "glamorous" and "modern" way of life is temptingly displayed in glossy propaganda from the mining companies and in cheap mass-circulation magazines from neighbouring countries. People are under pressure to buy flashy clothes that they cannot really afford, and money that should be spent on essentials, or invested, boosts imports from South Africa.

People in the modern sector seem invariably to become contemptuous of those down below. It induces self-contempt in some of the "rejects" and intensifies their efforts to identify with modernism. Its worst effect is in the view that crystallises among those above, that efforts to promote rural development are wasteful of resources. Its practical results are to allocate funds only to serve those in rural areas who spontaneously show initiative, co-operate with extension services, volunteer for

literacy programmes, join clubs and associations, and take advantage of rural credit facilities and co-operative marketing arrangements. At best, what emerges is a paternalistic, "soup-kitchen" approach. The so-called progressive peasantry becomes, with help, a petty bourgeoisie which, like the middle class which fosters its growth, soon sets about protecting its advantages.

Education

The effect of total pre-occupation with modernised development on secondary education has already been noted at various places in Chapter 1 and needs no repetition here. I would only stress here that it is clearly mistaken to place hopes of reforming a minority system of education in the multiplier effect. The dominant reality is that the formal system of education, inherited from Europe, serves primarily, as it did in Europe, to create a self-perpetuating, slowly growing, middle class.

A word on primary education may be appropriate. Until recently, enrolments in Botswana's primary school have been falling off. In 1968, 17 600 children were enrolled in the primary schools, in 1969, 14 655, in 1970, 12 721 and in 1971, 10 450. The result of this, and of secondary-school expansion, will be that, by 1978, 50% of the primary-school leavers in that year will find admission to secondary schools. The secondary-school admissions, related to the primary-school leavers of the previous year, will, for the next seven years, probably be as shown in Table 2.

These figures have been used to support claims that the secondary system was catching up on the primary-school-leaver problem; in fact, they disguised a new problem, namely, that increasing numbers of children were not going to school at all. Various reasons were advanced. A ceiling had been set on entry age to primary school and it might have produced the result here observed. It was also thought possible that the figures reflected a growing disillusionment with the lottery that primary schooling has come to be. It is well known that the main function of primary schools is to provide a catchment for secondary schools, that its curriculum is designed as the intial part of a longer programme, and that it seldom caters specifically for the needs of the great majority for whom it is terminal. However, the real reason for the falling off was perhaps revealed when the Government cut primary-school fees from R6 to R3 at the beginning of 1973. Enrolments have climbed again, indicating that many people simply could not afford to send their children to primary school. This shows that the old magic still works and that education, even primary education, continues to be regarded as offering the only real

Table 2. *Primary-school leavers and secondary enrolments*

	1971	1972	1973	1974	1975	1976	1977	1978
Form 1 vacancies	1 610	1 855	2 135	2 415	2 765	2 940	3 080	3 255
Standard 7 potential applicants	6 638	7 849	9 126	9 800	10 600	9 000	7 900	6 559
% entry	24	24	23	25	25	33	39	50

chances of progress. Governments tend to respond by continually providing additional facilities and satisfying many with an illusion of progress that cloaks a reality in which the numbers who fail to benefit increase much more than those who do benefit.

It has sometimes been said that parents will learn from what their children come home and tell them. Given the quality of education in primary schools, I wonder if it is not more likely that children who receive only a primary education will learn better if their parents have been made receptive to the new ideas and facts. Certainly the aspirations and total outlooks of young people are very much influenced and shaped by those of their elders. It is a small point, but it adds a little weight to the case for more dynamic approaches to development down below.

Negative effects

Rural production may suffer in various ways from competition with industrial production. The superior and probably cheaper products of industry may drive the local, small producer of comparable but less well-finished products out of production or prevent him from starting production. A small factory producing African beer can knock out a lot of village producers. Many potential village producers can be kept out of production by one factory employing very few workers—in industries like tanning, leatherwork, wool-spinning, vegetable-oil extraction, brick-making and lime-burning, to quote a few examples.

The corollary of concentrating totally on modern sector development is to relegate the rural sector to the role of the producer of primary raw materials, which are then exchanged for manufactured goods from the towns or for imported goods. This perpetuates the colonial patterns of trade. Furthermore, the market and money economy is almost totally geared to the workings of the modern sector and to this internal "colonial" pattern of trade, and it does not help promote internal trade and

production within the rural economy. Where people come to depend on money as the medium of exchange, its absence makes exchange increasingly difficult and production tends to cease. People then produce—apart from food and personal subsistence needs—only what someone in the modern sector will buy. Internal exchange, so essential to development in the rural areas, actually decreases. Money may also become the easiest means of mobilisation and, where there is a shortage of entrepreneurs with money, there will be unemployment, even of those with skills. This will become more so as traditional authority, which might have been able to organise production without money, begins to disappear.

The other leg

The case is not against modernised development as such. The case is for its harmonious co-ordination with "the other leg", and by implication also for "the other leg". The unemployed and underemployed must be seen as a major unused resource for development. Means must be found to mobilise them for development, means which at the same time raise the living standards of the people involved. One of the main planks in my case for Boiteko was that living standards could be raised in rural areas, not only by finding means of increasing the supply of goods and services from modern industry to the people there, but by getting them to meet some of their needs by utilising the available resources. The list of goods that, between them, Brigades and Boiteko either are now producing or could produce from local materials is quite impressive. It includes meat, vegetables, milk, grains, eggs, jams, honey, cheese and butter, cooking oil, personal needs like snuff, tobacco, soap, wool and leather (and goods made of both), tanning agents, clothing, wooden goods, including furniture, improved housing, using lime, brick, and stone with local poles and thatch of high quality, ornaments, beverages and household goods, pots and crockery. I am sure that the list can be extended and we are carrying out experiments to this end.

The problem of exchange difficulties due to shortages of cash is a real one that we have encountered in practice. We have produced some very fine pottery. The members of Boiteko like it, but they are not prepared to pay cash for it. The small sums of money that they can lay their hands on they reserve for absolute essentials. They would like better housing, too, of stone or brick, and they would like more meat, milk, eggs, and vegetables. But we have to sell most of the locally produced commodities to the few salary-earners who have cash to spare. This puts a ceiling on

our market and we have to restrict production. Owing to the way the economy is now organised, money can only come to an average villager by the sale of a steer, a goat, a skin or hides, bones (for bonemeal), beans or corn to a trader or by selling salary-earners firewood or by being their domestic servants.

I tried an experiment in an attempt to tackle the problem, I set up a store and stocked it with a wide range of goods, including goods made in Boiteko and by Brigades. I also put certain imported food stuffs in the store. The main aim was to make simultaneously available in one place a very wide range of locally made goods. This would overcome the weakness of barter, which lies, as I saw it, in the limited range of goods exchangeable against one's own produce. I then introduced vouchers as a substitute for money. People were given these vouchers for their produce rather than money. I hoped that we would be able to pay for the imported foodstuffs by exporting a proportion of the local produce out of the system. There were several reasons for abandoning the experiment after six months, and I shall discuss these in Chapter 3. What was proved was that people did use the vouchers to obtain pots, jerseys, sandals and leather goods, to name a few of the items made from local materials. These commodities improved their standard of living, but they would *not* have paid cash for them. In fact, we disposed of *all* the local produce that came into the store.

If a general statement of approach is necessary to summarise and conclude this discussion, it is this. Rural development implies increased agricultural production, but development means continually increasing production and continually increasing diversification of goods and services in both agriculture and industry. Development also implies that there should be a vigorous internal exchange of goods and services within the rural areas; production must not be limited only to exports abroad and exports to the modern sector but should be directed towards internal consumption as well.

Beyond that, I am not able to go. If I were to attempt a comprehensive statement on "an integrated approach to rural development", I would merely be re-hashing someone else's findings and conclusions. I prefer to confine myself to conclusions based on my actual experiences.

Harmonisation

The main areas in which harmonisation of the "two legs" is required relate to prices, incomes and dividends, investment, employment, imports,

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tariffs, advertising and publicity, taxation and duties, licensing of new industries, control of industry and trade, and education and training. There is little point in my trying to suggest either detailed measures for co-ordination or the kind of machinery needed to make it work. In general, the minimum requirement is a very radical policy, effective executive and watchdog machinery, and the will to make the policy work. The Arusha Declaration provides perhaps a good example of the kind of policy needed to create a new climate of opinion and new hope for the people down below.

CHAPTER 3

The Brigades and Boiteko

The Brigades, involving about 850 mainly young people in 12 different towns and villages in Botswana, are but an amelioration of the school-leaver problem in one small, developing country. But the insights we have so far gained have enabled us to identify some of the constraints that must be dealt with if we are to make a greater impact on the problem. The main focus of my own work in Brigades, in the immediate future, will be on working through the various measures, policies and programmes that would enable us to overcome these constraints.

It was a step forward to have provided vocational training that paid for all or most of its costs through the productive work of the trainees. But shortage of resources for meeting recurrent costs is not the only impediment to providing training facilities for the mass of school drop-outs. If we want to cover costs through production, we must be able to find markets for the goods and services which we produce.

It is not only money for recurrent costs of training that is required. Capital is also necessary, for equipment and other facilities. Means must be found to train instructors and managers, because these skills are in short supply and are necessary for expansions of the Brigade system. Training by itself is not enough; technical training creates skills, but that is not enough to create jobs.

We do not want to substitute a Brigade-leaver problem for a school-leaver problem. Creating jobs involves marketing, because, whether people are self-employed or employed by someone else, their goods and services have to be sold to make the employment possible. Creating jobs also requires management skills. The system of training that we offer the school-leaver must be acceptable to him (and to his parents); most of them, we know, would have preferred a secondary education.

While our programme is small and involves limited numbers, it is tempting to take shortcuts to solve problems—like raising more capital to buy machines to increase productivity (always possible on a small scale) or raising funds to subsidise recurrent costs when difficulties arise. It is more exacting, but it will be more rewarding, in running Brigades, to acknowledge the principles on which replicability depends at this stage.

If we can find ways of overcoming the constraints, we will have pioneered a system of education and employment open to large numbers of the drop-outs.

I should, at this point, make it clear that each of the 12 centres at which Brigades exist are independent, each having its own controlling body. The Serowe Brigades, likewise, have a controlling authority, of which I am but one member. There exists a National Brigade Co-ordinating Committee (NBCC), of which, at the time of writing, I am Vice-Chairman; as its name suggests, it has no executive functions, though there are plans to vest it with powers greater than its present statutes give it. While I believe that most of my colleagues working in Brigades would share my view and statement of the problems and endorse much of my assessment of the future, I must make it clear that I have no authority to bind others and that the opinions expressed, unless specifically indicated to the contrary, are my own.

Covering recurrent costs

The NBCC has defined cost-covering "as the covering by production income of a certain number of progressive steps of Brigade cost types". These steps are as follows:

1. Production or direct costs.
2. Overheads or administrative and marketing costs.
3. Essential training costs.
4. Depreciation or capital replacement.
5. Non-vocational teaching.
6. Room and board for trainees.
7. Additional investment capital.
8. "Non-essential" liaison, research, etc.

A Brigade is said to be covering its regular costs if its production income is sufficient to pay the first four types of expenditure listed above. Types 5–8 are extraordinary costs and, if they are incurred, will need to be paid from profits, if they exist, or other income, such as school fees or grants. Two further ways of recovering this extra expenditure are (*a*) to capitalise more intensively, and (*b*) to request salary subsidies from the Government or elsewhere for the more extension-type positions in the Brigade (type 8).

The five-year rule. A Brigade is expected to be covering its regular costs within five years of starting. After five years it is required to pre-

sent a report showing how many of the eight expenditure steps are being covered by production income, and from what sources other costs are being paid. The NBCC will then evaluate the status of the Brigade.

While covering the costs of non-vocational training is not an official requirement, I personally hope that Brigades will set themselves the target of doing so. Replicability is a major aim, and I want to see a truly worth-while replicability. I believe that the provision of non-vocational education is an important function of a Brigade. Later in this chapter, I shall discuss the aims of this non-vocational teaching, as I see them.

We have now achieved cost-covering in five of the Serowe Brigades—the Builders and Stonemasons, the Carpenters, Serowe Electrical, Serowe Engineering and the Serowe Textile Workshop. We hope that in 1973 the Tanners and Leatherworkers will begin to cover all their costs. Agriculture presents specific problems, which I shall discuss separately. The accounts of all these Brigades are presented in Appendix 2.

It has to be accepted that a new Brigade cannot immediately cover all its costs. The skills of trainees have first to be built up. On-the-job training needs good craftsmen who are also good teachers, but a Brigade cannot afford to commit itself to salaries that it is not able to cover from production. When new skills have to be introduced by expatriates requiring full professional salaries, subsidies have to be sought to cover the period needed for them to pass on their skills.

Training which takes place on the job need not mean any lowering of standards—a charge sometimes levelled at Brigades. To my mind, some of the essential aims of industrial training, namely, to maximise production, improve quality and efficiency, and to achieve competitive prices, are wholly consistent with—and, indeed, a prerequisite to—cost-covering.

The competition with Government and the private sector for skilled staff is felt mainly in the "modern-sector Brigades"—the Builders and Carpenters Brigades, Serowe Engineering and Serowe Electrical. As the accounts show, the last two can hold their own. Building and joinery present a special case because of the mining boom and the building of new mining townships associated with it. Large numbers of white technicians with high salaries have played a part in creating an inflationary situation. The boom will not last and wages will, I am sure, then return to a realistic level. If we, in semi-rural Serowe, had committed the Builders and Carpenters Brigades to the salary levels of the boom, we should have created an inflation in building costs in a rural area from which we could not later easily retreat. Our solution, in early 1973, was to set up

an Advanced Course to train the best of the 1972 Builders and Carpenters Brigades graduates. The course is run by a volunteer architect from Britain.

There are those in Botswana who argue that certain of the "regular" costs of Brigades should be subsidised, more especially the salaries of instructors, so that better instructors can be found to improve the training. I stand by the case I have made for replicability. The case for subsidies for instructors also rests on the argument that syllabuses for technical training often require exercises which are not encountered in the normal work patterns of contracts and normal commercial production. One has to ask how valid these exercises are if they are not related to the real life of daily work, especially if these exercises never crop up at all in a three-year programme of training. The case for subsidies includes another argument which needs answering. It points out that we have some very exceptional and extraordinarily versatile people in charge of Brigades, like Aaron Kibel, the Manager of Serowe Engineering, and Vernon Gibberd, of the Farmers, who accept salaries far below their market value. There is no doubt that expatriates are a special case and I concede the need for subsidies here; so, I think, do most of the Batswana Managers. An interesting point, though, is that Serowe Electrical has continued to do well even after the departure of its expatriate initiator. It is also argued that we should be more modest in our aims and that we put undue stress on our trainees by overstressing cost-covering. It is suggested that to cover even part of the costs is a major break-through, reduces subsidies and releases resources for other development. There are some who argue that Government funds are sometimes wastefully used. Why should Brigade trainees put up with stringent conditions when they can see evidence of such wastefulness around them? Revenues from new mining developments will make subsidisation of Brigades possible, and Brigades make better use of funds than some Government departments do!

When we launched the Brigades, cost-covering was imperative. The Government could not aid the school, let alone this new, untried experiment. It was a valuable experience, on which we have been able to base certain goals that I believe to be realistic. If we become dependent on subsidies, it will create new attitudes amongst Brigade staff and trainees, and replicability will slip further and further out of reach.

If money becomes available for subsidies, it should be used to pay certain expatriate salaries and to pay for curricular development in respect of both technical and non-vocational teaching, for experimentation, for

liaison, research and extension work, for infrastructure improvement, and for capital both for Brigades themselves and for creating employment structures.

Cost-covering permits better instructors at higher wages, if output and quality thereby improve; increased income then covers the higher costs.

Capital

The point has been well made that the higher the capital costs, the more limited the programme, in a poor country. If, therefore, the Brigades are to create training and employment opportunities on a worth-while scale, they should not absorb too much capital per trainee. One effect of this is, however, to reduce mechanisation, without which productivity will be much lower than it might otherwise be.

However, the total costs of running most of the Brigades varies between R200 and R250 per trainee per year. (This does not, of course, include the costs of the materials they work with, which is reckoned in the price of the commodities sold and in contracts, along with the running cost.) Even without mechanisation, trainees have been able to achieve a measure of skill, usually by their second year, to meet costs of that order through their production. What is important, in this respect, is to establish an optimum instructor/trainee ratio, bearing in mind the need to balance the cost of instruction against the need to keep trainees busy and properly supervised and to ensure good teaching.

Whilst acknowledging the general case for keeping down the capital costs per trainee, we must also recognise that development requires the continual increase and diversification of production, and the continual improvement of technologies, skills and tools. I trust that I have made the case for harmonised, two-prong development. Botswana has an urgent need for more complex, technological skills in both its urban and rural areas. The formal technical training institutes will not be able to meet these needs alone. The development of rural areas requires the maintenance and repair of vehicles, borehole equipment, engines and machines of all kinds, and the manufacture of appropriate tools and equipment, sometimes specially designed.

I think that we have demonstrated in Serowe that Brigade training can be adapted to a wide range of skills and skills of a wide range of complexity. The Brigades in Serowe are already serving a dual strategy of rural and urban development. In respect of training for modernised industry, it is likely that the capital costs per trainee will in some fields be much higher than in respect of training for less expensive technological

production. Mechanical training is a ready example. But in the interests of rapid, overall development and in view of the pressing manpower needs, the higher capital costs are justifiable on a limited scale.

Experimentation

If we are to diversify and increase production, without investing too much capital, we have to look for inexpensive techniques and tools of production, using local raw materials wherever possible. Our experiments are wide-ranging and cover techniques of vegetable gardening, the use of hafirs (plastic-lined underground reservoirs to catch rainwater run-off), flood-spreading in crop production, drip irrigation, non-selective grazing, the use of local clays and glazes in pottery, using sorghum instead of barley for brewing lager beer, introducing new livestock breeds and crossing with local breeds, making hand-operated carding machines and spinning wheels, hand-making of chalk and wire fencing, soap-making, devising appropriate pottery kilns for wood and used engine oil, tanning with local barks, pods and roots, glass-making and cement-making.

Some of the techniques and tools have proved workable and are already in use in Brigades and in Boiteko.

The Serowe Brigades Development Trust has agreed to set up a Food-processing Brigade, a Forestry Brigade, a Dam-construction Brigade and a Rural Builders' Brigade and experimentation is now proceeding in the search for appropriate techniques, tree species for afforestation and tools for simplifying dam construction.

Marketing

While there are only a few Brigades in existence, the marketing problem is manageable. We are able to sell most of our produce to the salary-earners. We have sold eggs, milk, cheese, cream, butter and yoghurt, leather goods, rugs, blankets, shawls and printed cloth, as far afield as Gaborone, 200 miles away. Some of the woollen products and printed cloth have been exported. Serowe Engineering has produced most of the school furniture for the local Council for the last few years. We have sold through co-operative stores, through a delivery service for vegetables, eggs and dairy produce, and on the market-place in Serowe. We have been awarded Government contracts for buildings and for the supply of farm produce to Government institutions. The Brigades and other pro-

ducers jointly set up Botswana-craft, which manages to sell much of the output of the Serowe Textile Workshop.

As the Brigades increase in number and size, and as they put more self-employed producers, who will compete with them, into production, the difficulties of marketing may increase.

In Chapter 2, I touched upon the need for diversification and internal exchange within a rural area as a pre-requistite of development there. If we do not promote this internal exchange, then rural development may proceed only so far as the market in the salaried, modern sector will allow it. To widen the range of skills for which Brigades provide training is to diversify the production of goods which can be circulated locally. Tanners, leather workers, textile workers, carpenters and builders, potters, brewers, electricians and mechanics, farmers and stonemasons, and in time food technicians, foresters, dam-builders, brickmakers, lime-burners, whether trained in Brigades or working in Boitekos, in some other structure or on their own, will provide goods and services for each other, as well as for export.

Brigade trainees cannot, on the whole, sell to each other, at least not unless they increase their production so much that it becomes possible to pay them bonuses. That is not inconceivable, but, in general, most of their produce would need to be marketed in the community. This provides a compelling reason for increasing consumption capacity in the community. It was thinking along these lines that prompted me to initiate Boiteko. In this case, it would not only be Brigade graduates who would be engaged in diversified production, but their parents as well, and the market for Brigade produce, as well as for the mutual exchange of produce, would have immeasurably expanded. Simple, inexpensive tools and techniques that can be quickly mastered are even more appropriate to older village people than to Brigade trainees, as few of the older people would be willing to spend long periods in Brigades. If we still encounter problems of exchange, because of cash shortages, it is not beyond us to devise systems of credit or money substitution. We have already tried that, and as I shall make clear later in this chapter, the substitute-money experiment was not abandoned because it failed, but because Boiteko had other more important short-term objectives which the experiment obscured.

Employment

Though the graduates of the Builders' and Carpenters' Brigades have all—up to now—been able to find paid employment, it is possible

that after a few years the demand for builders in the urban areas will fall off. We may even find that some of those now employed may lose their jobs. Equally, while most of the electricians and mechanics should find work, we cannot be sure that the motor engineers whom we are now training—the crankshaft grinders and conrod borers—will find work. There are now no other motor-engineering set-ups in Botswana. The same may apply to the technicians, foresters and dam-builders we propose to train. We are training five printers, too, who cannot all be assured of jobs. It was with this in mind that the Trust Deed of the Serowe Brigades Development Trust was designed to empower the Trust both to train and employ. In this way, a Brigade training project could simply be converted into an industrial enterprise when it was clear that its training function was no longer needed. As employer, the Trust would be in a position to control wages and serve the policy of harmonisation of the "two legs". Earnings from the profitable Brigades, and the profitable employment structures could be used for re-investment or to subsidise Brigades with special problems, like the Farmers' Brigade. The Trust might, for example, set up a farm near a major town, similar to the Farmers' Brigade, to promote import substitution. If it appears desirable to convert an enterprise into a co-operative, the Trust is empowered to do that and can take steps to guarantee its investment and fix a realistic rate of interest, according to the profitability of the enterprise.

This approach, while being an essential element of a dual development strategy, would nevertheless cater for only small numbers of people. The greater potential for replicability would be in co-operative structures like Boiteko. While a continual process of diversification of training and production in co-operative structures, like Boiteko, can absorb fairly large numbers of people, one of the main areas of production within the diversification process, namely, agriculture, presents special problems, which, unless resolved, will limit its capacity to create employment and will gravely distort the whole process.

Agriculture

In a climate as harsh as ours, little reliance can be placed on arable production from rainfall, either for revenue or for subsistence. To produce incomes of reasonable levels would need diversified farming operations, including the production of beef, mohair and wool, pigs and goats, dairy produce, vegetables and other high-value crops (using intensive horti-

culture and hydroponics, with controlled borehole irrigation and flood-spreading techniques), eggs and poultry, sunflower and silage, and, where cheap extensive irrigation is possible, a variety of arable crops. Such operations need a fairly large cattle-ranching element to be profitable. The Botswana Ministry of Agriculture's 1968–69 Agricultural Survey shows that something like 4% of the population owns 40% of the country's 1 500 000 cattle, and that a very substantial proportion of the population owns few or no cattle at all. Many of the young people seeking Brigade training or employment in Boiteko-type structures will come from just such poor families and they will need capital assistance for self-employment.

The Farmers' Brigade, itself, has experienced a great deal of difficulty in covering its costs. In 1972, its total production costs were R43 200, whilst its total income was R29 100, a loss of R14 100. The production costs included the manager's salary, which is subsidised, and depreciation of R8 600, as well as livestock losses of R3 330, a total of R14 730, which meant, in fact, that there was no cash outflow over the year. In 1971, an even bigger loss had partly been offset by livestock appreciation (as opposed to sales). The Brigade has absorbed grants and subsidies totalling over R150 000. It has an accumulated deficit, over 6 years, of about R85 000, including accumulated depreciation accounting for R40 000 or nearly half of this. As depreciation is one of the costs we set out to cover, this particular and most important Brigade is doing badly in terms of cost-covering. In addition, there are only about 10 young men in training now, as the Brigade is marking time while an acceptable and viable *in situ* and institutional scheme is worked out with a few villages. The farm is, however, employing its 15 best former trainees, not only because it is short of hands but also to train them as future instructors. Vernon Gibberd is now the only expatriate still working there.

In a paper which I published in 1969, I recognised that

> the capital cost of establishing the Brigades was highest in the case of the Farmers' Brigade. Quite considerable earnings were necessary to cover the high recurrent costs of this, which was originally intended to be the largest of the Brigades; the farming operation which we then felt could best meet these and produce an immediate surplus (given our arid climate) was, we thought, a dairy farm, requiring a substantial capital investment. While the initial capital cost of launching most of the other Brigades was lower than the capital cost of the Farmers' Brigade, we did not conclude from that that we should expand each of these cheaper Brigades without limit.

We thought that the supply of workers in each of these other fields would reach saturation point sooner than in agriculture, where the opportunities for Brigade-trained man-power were less limited, provided the problem of post-training employment could be solved.

Table 3 shows the total capital investment, including loans, in Brigades in Serowe at the end of 1972. The second column shows the number of trainees at present in training. The capital investment per trainee is R1 170 in terms of these figures. However, investment in the Farmers' Brigade accounts for 57% of the total and grossly distorts the picture, more especially as so few are now in training, and, with the benefit of hindsight, the investment in the farm could have been lower. If we exclude the Farm figures altogether, then the capital cost per trainee goes down to R500. If we exclude the modern-sector Engineering Workshop, the figure per trainee falls to R334. These figures compare with a capital cost per student at Swaneng Hill School of R660.

We knew that it had been a mistake to establish so large a dairy. The capital costs are extremely high. They include not only the cost of exotic livestock, which have necessitated frequent veterinary attention, but also the cost of the necessary cooling and refrigeration equipment, which entail machines, generators and engines. The arid climate means that insufficient grass is available and necessitates the importation of large quantities of cattle feed. The problem of dairying was exacerbated by the great distance from our main markets. We had to send most of our dairy produce to Gaborone, 200 miles away, by road and train, without refrigeration. Competition with dairy farmers in South Africa and Rhodesia, who supply the main towns along the railway line, prevented us from raising our prices. A large dairy may be justified on the grounds of import substitution, provided this function is specifically recognised, and protection and, if need be, subsidies are given to promote that objective. One justification of the dairy has been that it has provided an excellent training facility in the Brigade system for animal husbandry.

We had spent R20 000 altogether on establishing the dairy, and because so much machinery and equipment was required, depreciation was inordinately high. We spent perhaps another R20 000 on housing for the expatriate staff who have served at the Brigade from time to time. We had thought that, if we could plan a model Farmers' Brigade, learning from our experiences, we might be able to cut the capital costs down.

After much consideration and discussion, I am now forced to the conclusion that, given the conditions in Botswana, if we are to cover costs in

Table 3. *Total Brigade capital investment at Serowe up to 31 December 1972, including loans*

Brigade	Capital, rands	Number of trainees
Builders		45
Carpenters		45
Stonemasons		15
Painters	10 308.86	10
Textiles	47 894.72	60
Farmers	157 333.68	10
Electrical	400.00	12
Engineering	48 750.00	20
Tannery	9 852.79	18
	274 540.05	235

Farmers' Brigades and provide some capital to assist trainees to set up in employment, then we cannot escape a fairly high capital input per trainee. The factors that we have to consider in capitalisation are these:

(*a*) The climatic and geographical conditions in the area in which the Brigade is situated;

(*b*) The need to orientate training to employment and to the conditions in which trainees will ultimately work;

(*c*) The need to produce sufficient income to cover all the costs of training and to assist with employment creation;

(*d*) The need to make maximum use of the trainees' time in productive effort;

(*e*) The availability of markets for the produce.

The agricultural operations which we feel would take sufficient account of all these factors include the following: beef ranching, crop production, intensive horticulture, rearing of goats and other small stock, including poultry, and a *small* dairy. There would have to be a *large* cattle herd.

On the beef ranch we would recommend that a start should be made from the outset on building up a breeding herd but that simultaneously the facilities of the ranch should be used for fattening immature cattle, in order to produce an immediate income. This we failed to do in Serowe, relying initially on the dairy to achieve this objective. The breeding herd would be progressively built up.

There is an optimum number of trainees whose labour can be fully utilised on the farming operations proposed for typical Botswana conditions. What this means in practical terms is that we could not keep more

than 30 trainees occupied on the model farm we envisage. Most of the income will derive from cattle, but cattle-rearing is not really labour-intensive. Because the capital input in cattle has to be so high, the capital cost per trainee is unavoidably high as well.

The model which I suggest in these pages (see Appendix 1) is based on a scheme for combining *in situ* and institutional training. When the scheme is fully operational, there would be 30 trainees on the institutional farm at any one time, rotating with 30 others working in village co-operatives. One model Farmers' Brigade could thus serve six villages, catering for 10 from each. Five trainees from one village would be at the institution and five on the co-operative holding. Although only 30 would be in the institution, a total of 60 would actually be under training. They would be trained in this way for 3 years, and the estimates in Appendix 1 cover the wages of two farm instructors, who would divide their time among the six villages. These would be people like Ditshwanelo Makwati, who spent 3 months in Tanzania.

From our experience, the recurrent costs of training would be about R200 per trainee per year (though in the first year it would be higher because there would be so few trainees but a minimum of staff would still be required to operate the farm and get it started). This R200 should cover all costs of practical training, including instructors' salaries, academic teaching, theoretical teaching in farming, feeding and accommodation. The salary of an expatriate manager is included in the estimates for the model, and a subsidy is provided for this under capital requirements. The model assumes a staff of one manager and five trained assistants in the first year, increasing to nine when the scheme is fully operational. The contingents working in the villages will have to take care of themselves, as the members of Boiteko do, apart from a small amount of assistance through the World Food Programme.

The capital cost per trainee involved in these proposals would be R1 000, remembering that the scheme is actually intended to serve 60 trainees. However, this amount would ensure that all recurrent expenditure, including the salary of one expatriate instructor, could be covered from production and it would provide for R150 to each trainee to assist with capital formation in the village.

A striking point about the estimates is that half the capital required is for cattle. The national herd numbers about 1 500 000. It is a much under-utilised asset and one yearns for really effective and radical measures to promote the re-distribution of this wealth, from which Brigades and a large number of school-leavers might benefit. There are traditional

arrangements for the lending of cattle, in which the borrower may use the animals for ploughing or may drink the milk of the cows while caring for the cattle, but, generally speaking, calves born to such cattle belong to the owner and not to the borrower. These arrangements are not really appropriate to Brigades, which need to be able to fatten and dispose of the beasts and to be able to gain ownership of the calves. The Botswana Meat Commission, which owns the national abattoir, operates a grazier scheme, in which the Serowe Farmers' Brigade participates. The Commission finances the purchase of immature stock, which are then fattened on approved ranches. When the animals are slaughtered, the Commission deducts from its payment the capital advanced, interest, and various charges for administration. The Serowe Farmers' Brigade has been earning about R15 net per beast fattened over periods of 1 year. It is possible that a programme for expansion of Brigades could make greater use of this facility, if not to obviate the need for aid for the programme, at least to reduce dependence on it.

Employment in the village

Earlier, I suggested that, if an organisation like Boiteko is to survive and prosper, it must ensure that, when people have completed their training, they should be earning at least R15 per month. We should perhaps take a look at how this might be achieved and what level of capitalisation is necessary, bearing in mind the criteria of replicability.

First of all, I think it essential that those in the village engaged in farming should not only co-operate with each other but also form part of a larger, more diversified co-operative, like Boiteko in Serowe. If they are to succeed in farming, they will, as the Farmers' Brigade experience shows, require quite a lot of capital, more especially cattle. They may have difficulties in marketing their eggs, vegetables and milk. Within a co-operative, such commodities, if they cannot be sold, can be distributed through a system of credits or money-substitution vouchers, such as we tried previously in Boiteko. But, unlike the original experiment in Boiteko, the vouchers would not be the only or even the main means of payment. They would be used only to supplement cash income. I am sure that, if the cash income was in the region of R15, this supplementation of income by additional benefits in kind, exchanged through vouchers, would be very acceptable. It could be applied to the produce of other groups which were having marketing problems.

The farm trainees would have received R150 from the Farmers'

Brigade to help them to establish their own co-operative. This might buy them two or three cattle each. But a small ranch would be needed, with camps, and so would boreholes, fences for gardens, tools, buildings and equipment. Certain other activities can yield incomes of R15 per month or more, with lower initial investments than are required for farming, and they should be integrated in a co-operative, together with farming.

Table 4 shows the figures for the actual investments, numbers in employment and earnings in Serowe Boiteko.

The investment *per capita* revealed by these figures is R375. A total of R9 300, out of R24 000, went into buildings, larger and of a much higher quality than necessary. There is no reason why traditional buildings should not be erected to start with. In addition, several expatriates were involved in Boiteko when it began, and the subsidies, either actual or computed (in the case of volunteers), amounted to another R5 800 out of the R24 000. Expatriate assistance was required initially, because it was the first experiment of its kind and we had to find out what the problems were and how they could be resolved, before we could start thinking about replication. In particular, we needed the expertise of a volunteer economist to deal with the problems of money-substitution vouchers, while we were trying these out as a system of exchange. In any future such project, much less money would be needed for buildings and savings would be achieved, because no expatriates would be involved. No aid money was allocated for livestock in the first Serowe Boiteko. If earnings are to be satisfactory, however, I believe that, right from the beginning, there should be a fairly important livestock element in any new village project. There should be at least 20 cows and calves, goats, poultry and a choice of sheep, pigs or Angora goats for a co-operative with about 45 people.

The Tannery can be made much more lucrative by exporting crust-tanned goat skins. Serowe Boiteko suffered from having no trained people in it when it began. Its first members, and its only members for some time, were older people, and in most cases we made makeshift arrangements for training them, using part-time volunteers. The garden, especially, has suffered from lack of trained labour and this is reflected in its low income, shown in Table 4. The training of older people, and the problems raised by it, are discussed later in this chapter. Serowe Boiteko also suffered because most of the capital used on it went into buildings and not enough into equipment and material stocks.

Any new village project should maintain a co-operative store, to keep prices down and to assist in capital formation. If a licence is obtained for

Table 4. *Boiteko investments and earnings up to February 1973 in rands*

Production group	Initial aid investment	Member's capital formation, including material stocks added	Number in employment	Average direct initial capital	Group monthly average net earnings	Individual average monthly earnings
Brickfield	400	50	4	100	45	11.25
Transport	800		2	400	18	9.00
Garden & Livestock			3	200	15	5.00
Shelters	200	100				
Livestock		150				
Garden	200	200				
Initial expatriate assistance	200					
Textiles			22	230	160	7.30
Buildings	4 000					
Equipment	750	250				
Initial part-time expatriate assistance	300					
Stocks	20	50				
Pottery			6	1 030	75[a]	12.50
Buildings	1 500	200				
Kilns	400	50				
Equipment	900	300				
Expatriate assistance	3 300					
Stocks	100	200				
Brewery			2	700	15	7.50
Building	800					
Equipment	300	20				
Initial expatriate assistance	250					
Stock	50					
Tannery			3	550	20	6.65
Building	1 400	50				
Equipment	200	50				
Stock	40					
Kitchen			2	890	15	7.50
Building	1 600	50				
Equipment	100	50				
Stocks	30	10				
Initial expatriate assistance	750					
Builders						
Tools	100	200	19	5	170	9.45

[a] The Pottery's earnings are higher than this, but some is being held back to pay part of the salary of Peter Hawes.

Table. 4 (Cont.)

Production group	Initial aid investment	Member's capital formation, including material stocks added	Number in employment	Average direct initial capital	Group monthly average net earnings	Individual average monthly earnings
Lime-burning						
Kiln	160	20	1	200	5	5.00
Equipment	40	10				
Photography			1	550	8	8.00
Building		250				
Equipment	200					
Stocks	50	20				
Initial expatriate assistance	300					
General						
Toilets	900					
Water supply	2 100					
Storage	500					
Initial expatriate administrative assistance	1 200					
Tools	150					
Other items	100					
Totals	24 390	2 280	65	375	546	8.40

retail sales to the public in the village, not only of the produce of the project but also of imported goods, this should provide an additional source of income.

Table 5 provides estimates of the capital required to employ 44 in a model village co-operative and estimates of likely earnings once it is fully operational and has a full complement of members. Provision is made in these estimates to cover the wages of nine instructors from various Brigades, who would assist with the initial training of all the project's participants in the village for a four-month period. They would all be graduates of Brigades and their skills would cover the whole range of the project's activities. One of them would be the team leader, and he would remain as organiser of the project for most of the year, his salary subsequently being paid out of Farmers' Brigade earnings. He would have responsibility for two other projects, but, while he was absent, his place would be taken by one or two instructors from other Brigades. Each of the Brigades involved in the new programme would assign one or two rov-

Table 5. *Estimates of capital requirements and of earnings in a model diversified village co-operative (in rands)*

Activity		Capital needed	Numbers employed	Average direct capital requirement	Average group monthly earnings	Average individual monthly earnings
Farming		3 900		390	120	12.00
Cattle & small stock	3 000		2			
Poultry	200		1			
Dairy	400		1			
Gardens	200		5			
Nursery	100		1			
Brickmaking		200	3	66	30	10.00
Transport		600	1	600	10	10.00
Textiles		500	6	83	75	12.50
Building & Stone-masonry		200	6	33	90	15.00
Food-processing & Bakery		250	2	125	25	12.50
Photography & Processing		250	1	250	12	12.00
Carpentry		300	3	100	42	14.00
Tannery & Leatherwork		400	4	100	80	20.00
Lime-burning & Cement		400	1	400	13	13.00
Metalwork & Maintenance		400	1	400	20	20.00
Brewing & Beverages		200	1	200	9	9.00
Pottery & Glass		500	2	250	30	15.00
Soap & Glue-making		200	1	200	13	13.00
Miscellaneous Products & Sales		100	2	50	30	15.00
General						
Water supplies		1 200[a]				
Buildings		2 500				
Fencing		500[a]				
Generator		500				
General tools		300				
Furniture		200				
Salaries of 9 instructors at R25 per month for 4 months		900				
Totals		14 500	44	329	599	13.61

[a] These costs will be higher, but some will be met by a village ranching association (see page 94).

ing instructors (depending on their capacity to pay salaries), who would spend two months or so in each of the villages where a project had been set up. All would have spent some time in the Serowe Boiteko, familiarising themselves with its human and organisational problems. If such

people could, like Ditshwanelo Makwati, be sent to Tanzania to follow up their Brigade training and Boiteko experience, they would learn lessons of enormous value for their work in a village.

A few of the people involved in Boiteko have some livestock of their own, from which they supplement the income derived from the project. One of the ways in which some of them spend the cash they earn is in buying small stock, especially goats. While incomes from Boiteko are very low, it is not surprising that they have reservations about putting their own stock into the co-operative, and that they prefer to build up their little private holdings. In time, if incomes can rise, there may be a greater willingness to pool these private resources. If the training of the Brigade has been good, then improved management should enable the whole co-operative to benefit from this new source of wealth, and the individual to earn more from his stock than he could by private management.

Capitalisation of employment creation

We cannot consider the problem of capitalisation of the village employment structures in isolation from the problem of capitalisation of new Brigade projects. If our eyes are focussed on a meaningful replication, then we must consider the financing of training and job-creation as a single continuous problem.

In the model Farmers' Brigade estimates discussed earlier in this chapter, I included in the costs to be covered the sum of R50 per trainee per year for job creation. This would provide R150 for each farming member of a village co-operative. Also included in those estimates are the wages of two instructors to be the organisers of village projects. But, to cover these and other costs, a fairly high capital investment is needed in each Farmers' Brigade in the first place.

If other Brigades are to join in the programme of combined *in situ* and institutional training, would we need to increase their capital, too, through greater mechanisation, to enable them to provide capital for employment and salaries for roving instructors? It is just possible that we might be able to increase productivity in most of the other Brigades without having to mechanise and capitalise appreciably more. In almost all the other Brigades, productivity is much lower than it could be. Generally speaking, the trainees do not work particularly hard. Kelebone Letela, the Manager of the Carpenters' Brigade, and a Mosotho on contract with us, remarked that the trainees "behave as if they feel op-

pressed". Motivation is poor, and we can account for it partly by the general discontent of being near the bottom of a divided society. Sometimes, the instructors are also infected by the mood of discontent. Improving motivation is high on our list of priorities in Serowe. It is possible to counteract, to some extent, the mood that social divisions induce. We are improving the non-vocational teaching; morale is certainly improved when the trainees feel their education is being taken seriously, even if only for one day a week. In the teaching, we try to explain the causes of social divisions and the lack of jobs. We also try to keep our ears to the ground in case there are specific grievances to exacerbate discontent, and to do what we can to amelioriate them, if we can, within the constraints of cost-covering, for the grievances are invariably about conditions involving finance. The Farmers' Brigades require extra capital, and especially cattle, for special reasons. For one thing, the Farmers work harder and work longer hours than most other trainees, with fewer holidays. But in our conditions, harder work is not the only or even the key factor to raising farm incomes. One may work as hard as one can in the blazing sun of summer, only to find that drought kills all one's crops.

The Farmers' Brigade aside, it is not beyond the capacity of any of our Brigades to cover their "regular costs" and costs of academic teaching—varying between R200 and R250 per trainee per year—as well as the extra R50 needed for village capitalisation and some contribution towards the wages of roving instructors.

Hindsight showed us where we could make savings in the Farmers' Brigade. The same is true of the Serowe Textile Workshop, and even of the Tannery. If we apply the lessons we have learnt to a new programme of expansion, we shall certainly not need more capital than is shown in Table 3 for these Brigades, even if we had it in mind to improve mechanisation a little, so as to increase productivity to cover the extra costs of developing village projects. In fact, reductions might even be possible here and there.

Some financial commitment should be expected personally from the trainees themselves. It is important to give them a sense of owning the project; they must feel it is theirs. There should be a minimum shareholding, to be subscribed within a certain period. It could possibly come out of initial earnings from the village project, after it has started. Certain labour investments could be asked of those who do not have cash. Continuing participation in capital formation—through labour-investments and savings—should certainly be a part of the programme.

There are resources available within the country, like the under-

utilised national cattle herd, and we need to find ways of mobilising them. The Botswana Meat Commission's grazier scheme is a way of mobilising the cattle. There are other ways. At the time of writing, we are starting a village co-operative on the lines of Boiteko at Mabeleapodi, 18 miles north-west of Serowe. The village has agreed to establish a ranch and will bear some of the costs, provided their cattle can graze there for a fee. The fee will also cover a limited amount of management. The ranch will be fenced and non-selective grazing and other conservation techniques can be applied there. The management and grazing fee will add to the project's income. If we cannot get possession of the cattle of the rich, a management fee is at least a means of deriving benefit from them.

As mining revenue increases, funds will become available for development. Those of us who plead for diversions of these new mining revenues away from increased modern-sector salaries and who urge the co-ordinated splitting of such money between modernised and popularly-based development must present sound projects. We must show that such projects are viable and realistic and that they work. We must prove that our projects can create more jobs than can be achieved by investment of the same amount in modernised industry.

If we can prove all that, we shall have established our claim for a share of new mining revenues. The Government will certainly be looking for good rural-development projects to invest in. The Brigades have already attracted aid from abroad and I think that good projects will continue to do so. It is easier to find money for capital than for recurrent costs, and this favours cost-covering Brigades. Funds channelled through bodies like the Serowe Brigades Development Trust could be soft, long-term loans to the new Boitekos in the villages, and out of this a Revolving Loan Fund could emerge, so making the most effective use of the initial grants.

Table 6 shows very approximately what it might cost to establish one new Brigade centre, serving six villages by providing combined *in situ* and institutional training in each of the various skill areas to 264 people over a 3-year period. Included is a subsidy to meet the salary of a co-ordinator, whose role will be described later. The capital required for job creation in each village, according to Table 5, would be R14 500, a total for the six of R87 000. It would be sensible to add to this a sum of R3 000 to subsidise the wages of roving instructors, in case some of the Brigades found this too great a burden. The total needed is R90 000. If the Brigades in the centre could manage to generate capital at the rate of R50 per trainee per year, this would contribute R39 600 towards the

Table 6. *Capital costs of one new Brigade centre, serving six villages with combined* in situ *and institutional training*

Brigade	Numbers in training	Capital, rands
Farmers	60	60 000
Tanners	24	10 000
Textiles	36	15 000
Rural Builders	36	5 000
Carpentry	18	3 000
Rural Mechanics	12	30 000
Food-processing	12	6 000
Pottery	12	6 000
General & miscellaneous industrial	54	10 000
	264	145 000
Subsidy of salary of co-ordinator and assistants for 3 to 5 years		25 000
		170 000

total. If each of the 264 participants in the scheme had to contribute R20 in cash and R20 in labour investment (the really poor, R40 in labour investment) towards meeting its initial costs, a further R10 560 would have been found. This would leave a balance of R36 840 to be sought from other sources. In order to establish the centre, R170 000 has to be added to this, making a total of R206 840.

This sum would cater for the *training and employment* of 264 people over a 3-year period, besides having created a centre capable of training another 264 every 3 years. In the second 3-year period, capital requirements would be limited to the employment-creation function in the village. Allowing for rising costs, these might be of the order of R60 000 for six more villages. Over a period of 6 years, one centre could then train and establish in employment 528 people, at a total cost of some R266 840 or some R505 per person.

This is not an unduly fanciful picture of the possibilities. The costings are related to actual experience with Brigades and with Serowe Boiteko. I have, over 10 years or so, been instrumental or involved in raising some R2.7 million for three schools and the various Brigades which were—and in some cases still are—associated with them. When Madiba School in Mahalapye completes its development, those funds will have created secondary-education facilities for some 2 000 (and paid for the education of many hundreds of them), and it might have financed

Brigade *training* (but not employment) opportunities for perhaps another 1 000. That sum could be said to have been the cost of my own re-education, but I think it was well used for its other purposes. If the same amount were applied to a new Brigade-expansion programme along the lines discussed in these pages, it might be possible to create training *and employment* opportunities for some 5 280 people over a 6-year period.

In the meantime, I have already been promised funds to capitalise new Boiteko projects in two small villages and this will provide us with a trial run for the new programme. Training for these new Boitekos will take place in existing Serowe Brigades and in the workplace. If the above figures, and the experience on which they are based, are valid as a guide to the future, then, from the financial point of view, the kind of approach outlined in these pages could make the school-leaver problem manageable in a small country like Botswana. The validity of our experience as a guide to the future may be questioned on grounds of scale; in Boiteko and in Brigades, we have been dealing with tens and hundreds of people. In the future, we may have to deal with thousands. I intend discussing that question later in this chapter.

Problems of combined in situ and institutional training

The manner in which *in situ* and institutionalised training can be operated between Brigade and village co-operatives such as Boiteko is now being worked out in detail and in practice. The institutional Brigade must continue to operate in a manner that enables it to cover the cost of training. The requirements of *in situ* training, on the other hand, may undermine this. The combined *in situ* and institutional training envisages a rotation of trainees between the village and the institutional Brigade for periods of 3 to 6 months, with probably one-half from any village remaining in the village Boiteko-type co-operative and another half in the institutional Brigade, at any time. Whilst in the village, the trainees would participate in the share-out of earnings in the same way as Boiteko does. But whilst in the Brigade, they would not, since the earnings of the Brigade must be used to defray expenses incurred in training. The Brigades really need the skills of second- and third-year trainees full-time to increase their output of good-quality products, in order to be able to cover costs. On the other hand, the principle of *in situ* training requires that the trainees should be integrated from the outset and throughout the training period into the village co-operative of which they will form an essential part. The problems which were encountered in purely institu-

Fig. 1. A view of part of the centre of Serowe, taken from the Serowe Hill. Some of the Brigade buildings can be seen just in front of the Serowe dam, an earth dam built by a tribal regiment many years ago, to catch rainwater run-off.

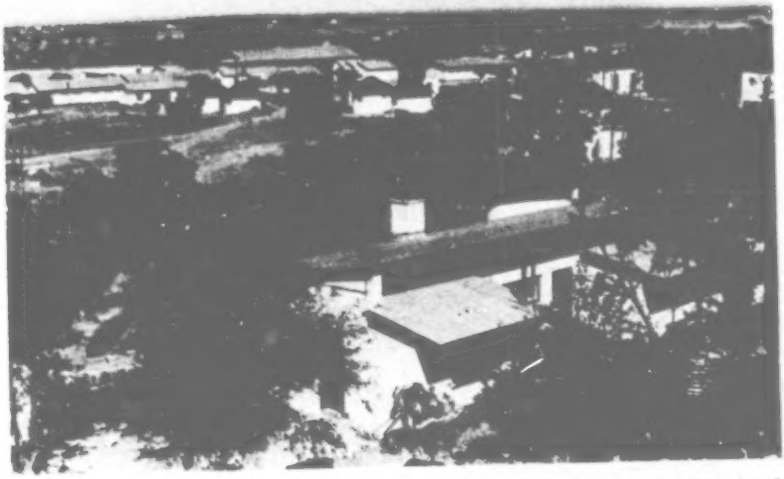

Fig. 2. A view of part of Swaneng Hill School, taken from a hill in the school grounds, showing some classrooms and some staff quarters.

962 94

Fig. 3. A Form I Class at Swaneng Hill School. An attempt has been made to break away from the traditional classroom layout; the students are engaged in a group-learning activity.

Fig. 4. Swaneng Hill secondary-school students preparing for a practical building-science lesson. The building at the back is the woodwork and technical-drawing block; it was built by students' voluntary work.

960b

Fig. 5. Student volunteers building an art room at Swaneng Hill School. Others seen near the lorry are unloading bricks. The building behind the lorry is a science laboratory, built by student voluntary labour.

Fig. 6. Swaneng Hill School students doing voluntary work on a Saturday morning. They are seen here building a science laboratory.

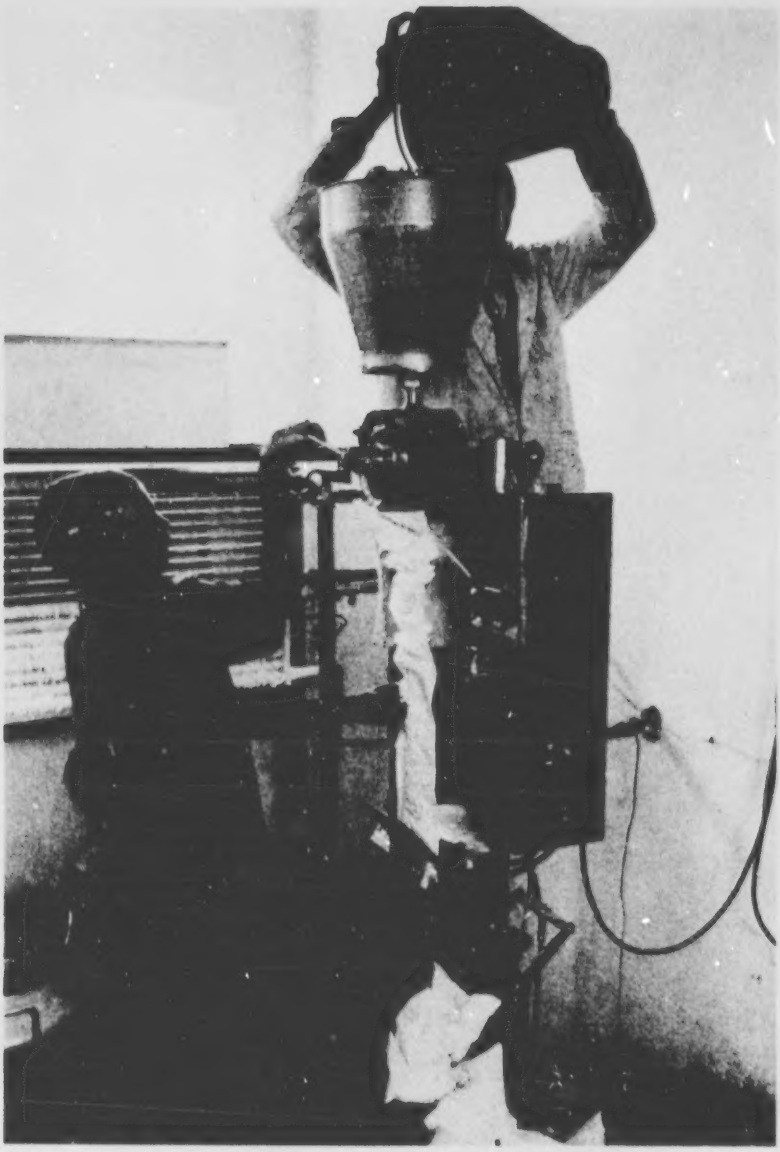

Fig. 7. Cooled, pasteurised milk is being packaged in plastic bags and will then be stored in the cold room, ready for sale and delivery. The boy on the left is Katlhego Mmopi. He was one of the first farm trainees and was later admitted to the secondary school, but continues to work at the farm, which pays his fees in recognition of his work. Tlhagiso Mpusang, obscured by the bucket, is the Farmers' Brigade Assistant Manager.

96 d

Fig. 8. Farmers' Brigade trainees delivering milk by mule cart. They are seen passing the Serowe Textile Workshop.

Fig. 9. A Friesland cow is being inspected before milking by Ketshabe, one of the very first trainees of the Serowe Farmers' Brigade and now in charge of the dairy herd. All the cows in the kraals will be inspected before milking; if any are in poor condition or on heat, trainees will take action later in the day.

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Fig. 10. Girls at the Serowe Textile Workshop are shown here weaving wool on hand looms. Their instructor, wearing a white hat and spectacles, is keeping a close eye on their work.

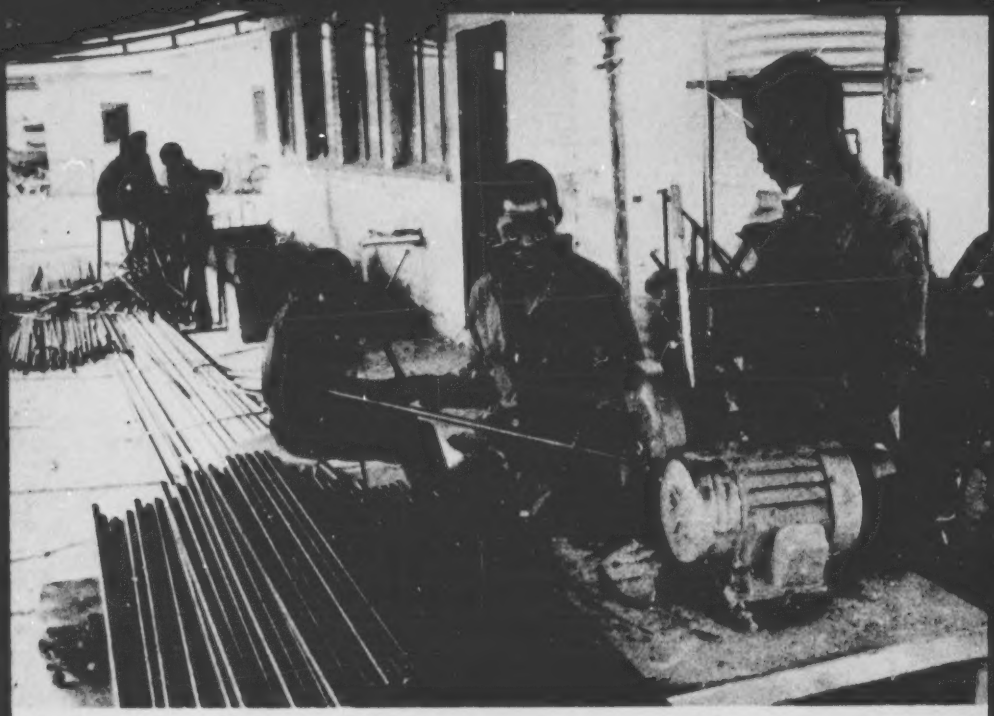

Fig. 11. Young men at Serowe Engineering are bending, filing, and cutting tube and angle iron to make chairs and tables for primary schools.

Fig. 12. Builders' Brigade trainees putting a rafter on a house they are building for a Serowe resident.

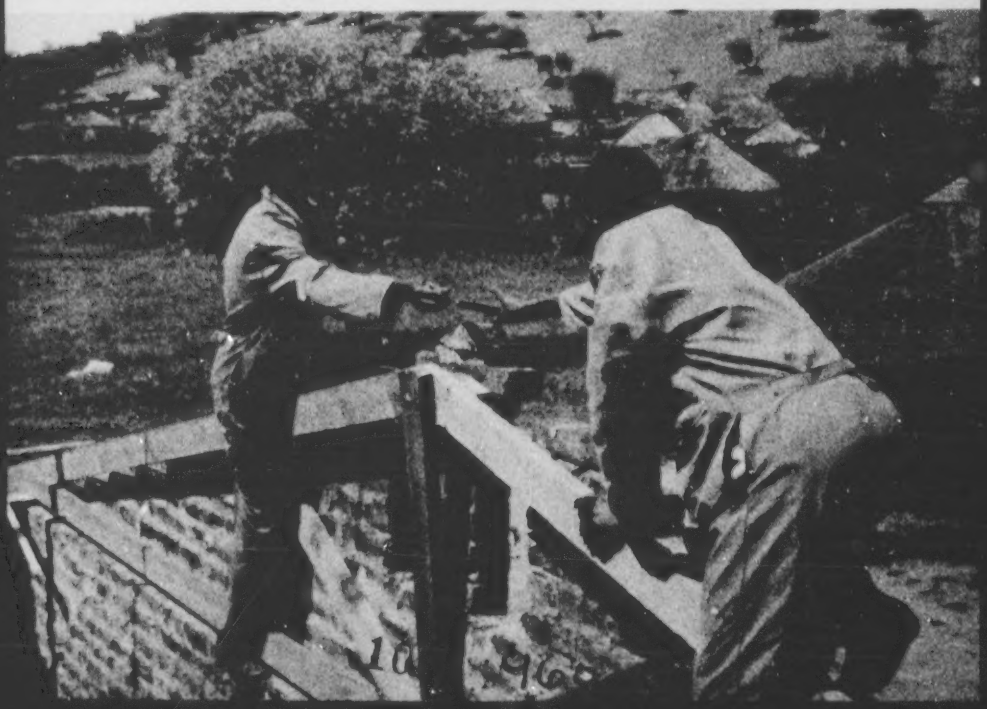

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Fig. 15. One of the Boiteko brickmakers testing bricks moulded from earth. They are drying in the sun prior to packing in a kiln for burning.

Fig. 13. *Upper left.* Boiteko builders are mixing concrete to pour for the Boiteko kitchen floor. The toilet, laundry and washroom block which they built can be seen to the right. It is awaiting its thatched roof. Over on the left is the main Boiteko building, which was used as a store in the days of the substitute-money vouchers.

Fig. 14. *Lower left.* Two Boiteko builders levelling concrete which has just been poured for the floor of the Boiteko kitchen. In the background is the pottery building, with its thatched roof. The ground, it will be seen, is bare through overgrazing. Since the photograph was taken, it has been fenced.

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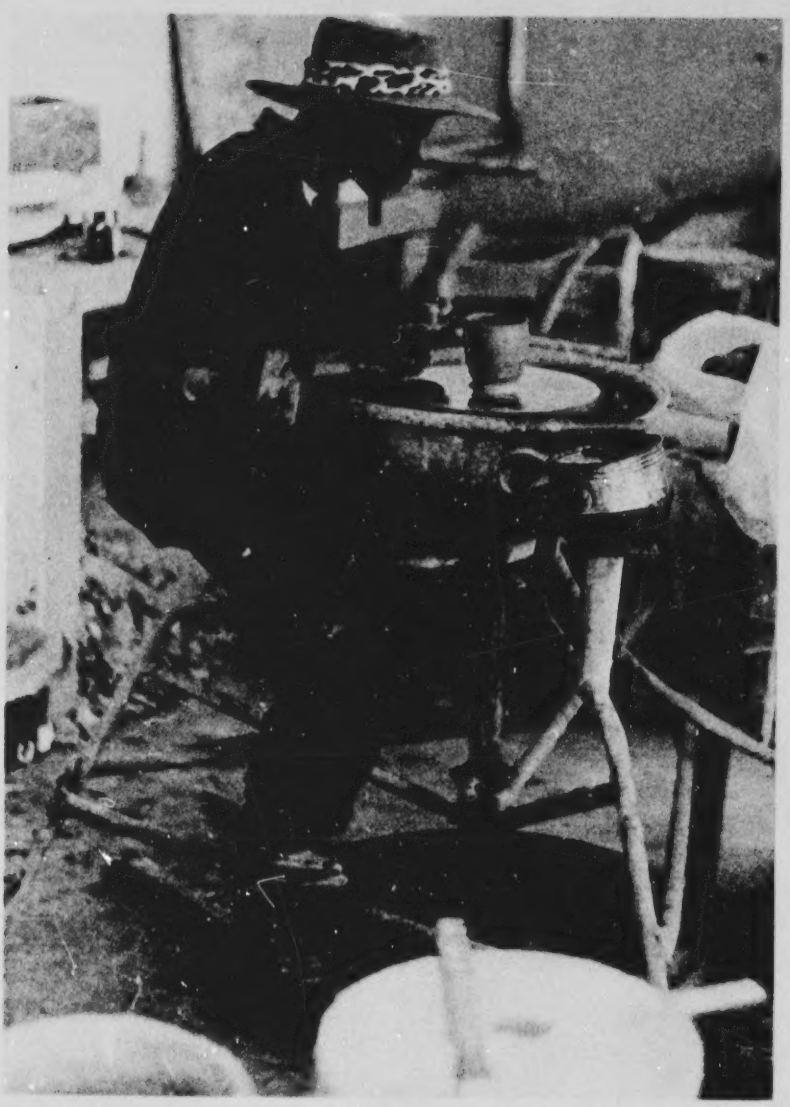

Fig. 16. A young man throwing a pot on a wheel made by Peter Hawes, who is in charge of the pottery at Boiteko.

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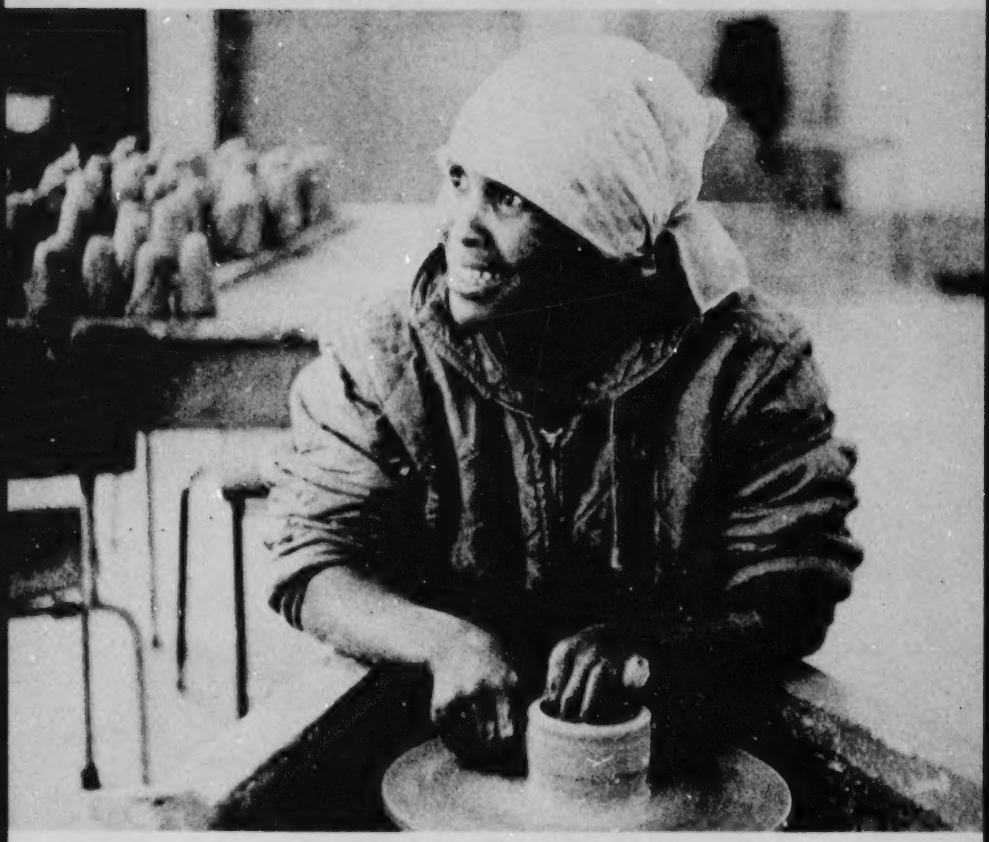

Fig. 17. A woman potter working at a wheel in the Boiteko pottery.

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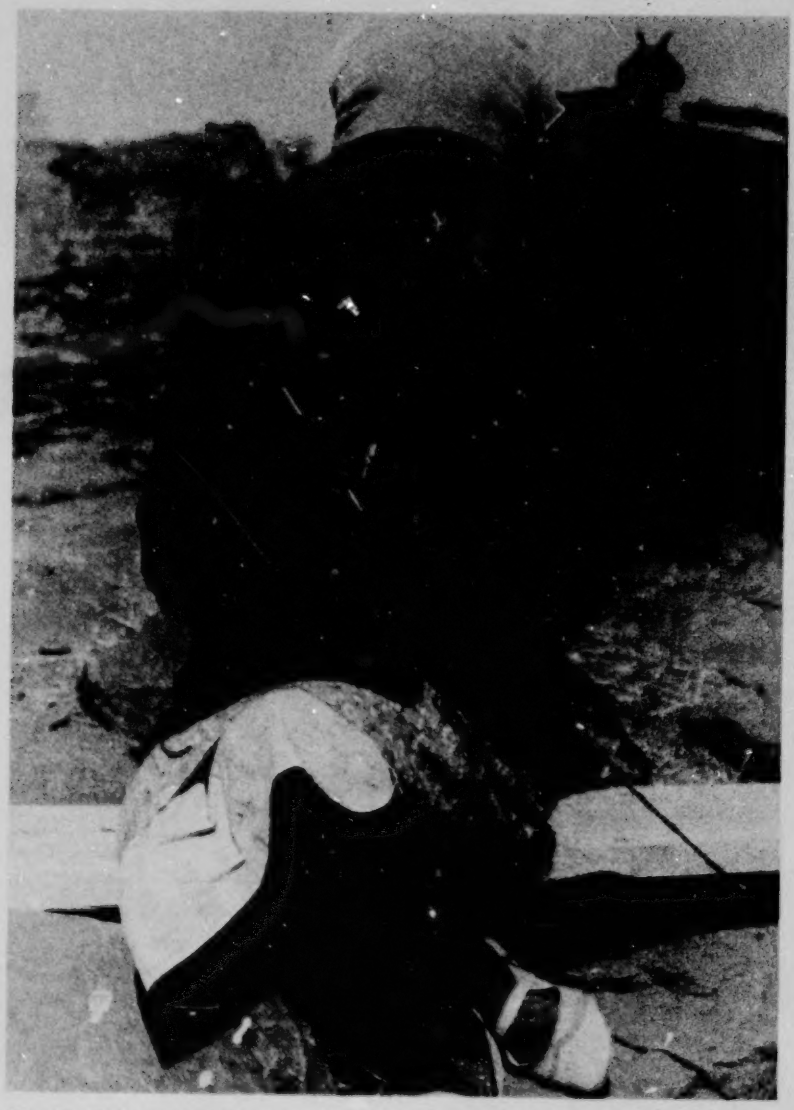

Fig. 18. Segametse Makaloba, who helped to run the substitute-money voucher system in Boiteko, is making a woollen garment by crochet work.

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tional training and which we want to resolve by the new approach were that trainees were afraid, when they emerged from the institutional cocoon, of the problems and tasks that lay ahead in forming their own independent and entirely new co-operatives, not knowing what they would earn. They kept demanding that we should find paid employment for them. The Boiteko village organisation would be an existing co-operative, with organisational problems largely resolved, in which earnings would be known—from the Serowe model—and would be seen to be rising as skills improved and experience was gained.

The Farmers' Brigade in Serowe is solving the problem for the institutional Brigade by retaining on its staff the 15 best of its very first intake, to be instructors and leaders of the sections concerned with the dairy herd, the dairy, the ranch, the poultry, the small stock and the beef ranch. In addition, selected former trainees will be assigned to the village-farm operation within the Boiteko co-operatives—at the expense of the Farmers' Brigade. A new model Farmers' Brigade could afford this solution. Whether other Brigades can afford the same solution, we have yet to see. The new Rural Builders' Brigade is designed to train people for village co-operatives and our experience there will disclose the problems of making the new policy work in the field of building. The Textile Workshop and the Tannery may well be able to afford a nucleus of permanent former trainees to ensure that production is maintained at satisfactory levels. After a while, the problem should resolve itself, as more experienced *in situ* trainees take their turn in the institutions. The problem then likely to arise is that trainees will be reluctant to take their turn in the institutional Brigades, because they will lose the benefit of their earnings in the village share-out. Of course, these problems will need to be fully discussed with the village groups, in advance and at various times during training. It may also be necessary and possible to levy a fee from the village group, deductible from total earnings and to be paid to the institutional Brigades for the whole time that they are providing training for members of the village groups. The total income from such a levy is not likely to be adequate, however, to meet Brigade costs, given that village groups are not highly capitalised and that their degree of mechanisation and therefore their productivity are limited.

A possibility that we are now considering, in order to help to resolve the problem facing institutional Brigades in covering training costs, is that some of them might operate on two levels of technology. Thus, the Tannery would retain the simple, inexpensive methods now being used

and which village groups also use, but it would also have *some* more expensive equipment that would enable production to increase. This would be mainly operated by the permanent nucleus, but *in situ* trainees would spend some of their time learning with such equipment to up-grade their skills and knowledge. The Brigade would have more chance of covering costs in this way. To some extent, this is already the approach of the existing Farmers' Brigade, where techniques and equipment of different levels of sophistication are used. Indeed, we have had critics of our Farmers' Brigade who have seen its sophisticated, modern-farm approach—particularly the dairy—as irrelevant to village agriculture. This criticism overlooks those elements of the operation which are simple and applicable in villages. But in view of our new approach to a combination of *in situ* and institutional training, I think that we can justify the operation of dual techniques within an institutional Brigade to enable the institution to finance village training, providing we can mechanise fairly inexpensively.

All the participants in a village project will spend their first 4 months in their workplace. These workplaces have to be built up from scratch. We want participants to understand clearly that the village will be their future workplace, before they enter the institutional Brigades. The splitting of trainees between institution and workplace will start after the first 4 months. When they go into the Brigade, they will have some rudiments of their skill, acquired from the nine instructors assigned to the village to start the project. (Their salaries are included in the estimates in Table 5.) The training given in the institutions will be followed up by regular visits from these "roving" instructors.

How will the new approach affect the training? We have so far only a very limited experience to go on, in respect of this particular problem. The work patterns of Brigades may have to be altered a little in consequence of the "sandwich course". The "sandwich" technique of training is one in which several countries have experience on which we can draw in designing our "syllabuses" and translating them into commercial work in Brigades. The objective will probably be to give trainees mastery over a specific technique or set of techniques during each spell in the Brigade. Dressmakers would learn to make a particular garment, leather workers to make a sandal or a satchel, farmers how to grow several types of vegetables, using drip irrigation, and so on.

Training of older people

Our experience in Boiteko suggests that most older people are unable or unwilling to spend time in a Brigade for training. They have family responsibilities or they need cash too badly to sacrifice the share-out.

We want older people to participate in these projects and it is important to make it possible for them to join and to participate fully. We hope that the younger participants will pass on the knowledge they acquire in Brigades and that the roving instructors can teach the older people rudimentary skills. We will also organise very short courses specifically for older people in simple operations, like spinning wool, using a sewing machine, de-liming goat skins, crust-tanning, and so on.

Several Brigade-trained people have more recently joined Boiteko. They expect to receive more in the share-out than members who have not been fully trained. We have had to make the older members understand the importance of skill in increasing productivity and in improving earnings. We have also had to make them understand that training costs money, which is precisely why people in a Brigade forgo any earnings. When Boiteko shares out its surpluses, account is taken of skill, contributions to capital formation and extra hours worked. There was much dissatisfaction amongst the older members when we introduced measures to increase the share of those people with skills learned in a Brigade. If younger, Brigade-trained participants are going to spend time on teaching the older participants, production will be affected. The older people therefore have to be made to understand that the younger people can only be expected to help them if their reward in the share-out is greater. Thereafter, we must persuade older members in the village to attend the part-time courses we are planning.

Boiteko

Boiteko has been described and discussed at various places throughout this book. Since its inception, its consistent aims have been the following:

(*a*) To create, through experiment, a replicable model project, capable of raising living standards and providing employment in rural areas;

(*b*) To draw men and women *of all ages* into production and development;

(*c*) To maximise the use of inexpensive tools and techniques of production,

(*d*) To maximise the use of local materials in production;

(*e*) To create simple systems of management, more especially systems which will lead to mutual pressures among participants for increased production;

(*f*) To encourage co-operation and interdependence;

(*g*) To encourage spontaneous capital formation and to promote the control by ordinary people of their own enterprises and capital;

(*h*) To impart and to improve skills;

(*i*) To broaden the horizons and increase the awareness of participants.

For a while, we were also experimenting with the use of a voucher system as a substitute for money, in order to promote the exchange of their produce amongst poor village people with little cash.

In my various references to the project at other places in the book, I have reported on the capital invested in Boiteko, the numbers involved, the earnings, and the progress we have made in achieving objectives. I have also noted some of the mistakes we made. I have stressed the importance of the project as a model for future, diversified, village co-operatives. We have drawn lessons for the planning of such projects from our experiences in Boiteko. We have been quite successful in maximising inexpensive tools and techniques. We have devised such tools and techniques and they are in operation. We have been fairly successful in maximising the use of local materials. Slowly, a certain amount of capital formation has taken place. The management systems are reasonably simple and the members are closely involved in them. But they still need the help of Peter Hawes, the potter (he and his wife are the only expatriates now left in Boiteko), with the accounts. Skills have improved slowly, and a good proportion of the produce is of reasonable quality. Some of the pottery, shawls and blankets are of a quite high standard. We have made some progress in encouraging co-operation and mutual interdependence, but a lot remains to be done. We have not been very successful in persuading people to apply pressure to each other to increase productivity. We have increased the awareness of the members a little.

The reasons for abandoning the substitute-currency vouchers are given in this extract from a paper I wrote at the time. This paper also referred to certain other problems that we were encountering.

We made the mistake of paying people in vouchers by the hour and we soon had inflation, because production was not high enough. Pricing of goods in our vouchers was done at general meetings, where we tried to show people that, if goods took a long time to make, then the price would be high in terms of vouchers paid for hours of work. We had hoped that, if people understood inflation as being caused by slow work, there would be mutual pressure amongst them to bring down prices by stepping-up production. It did not work. Nor were people learning the value of co-operative effort in work and in capital formation. They were not really grasping that they were employing each other by buying each other's goods and that there was no other employer. And they did not see that growth would come through increased diversification, productivity and the pooling of work, assets, skills and surpluses.

We came to feel that, if we wanted people to assimilate thoroughly the lessons we wanted to teach, so that these lessons would come to guide and determine their behaviour, then we should ensure that what we did in practice in the project would reflect what we were saying. We therefore abolished the voucher payments and substituted instead a share-out of produce. This had two forms. Some goods were sold by each production group, production costs were deducted and the balance was put into a general pool. The total pooled was shared by all workers. In addition, certain produce was shared-out free amongst members, goods like clothes and jerseys being distributed on a rota basis. People began to assimilate the link between production and earnings better in this system than they had previously.

In the future, if more Boitekos come into being and Brigades expand, marketing problems are certain to arise. It may be necessary, at some later stage, to use the currency-voucher system again—based not on hours of work, but on production—to facilitate and promote the exchange, amongst producers, of their own goods. But, in the first Boiteko model, we had other more pressing objectives. For example, we wanted people to understand clearly that their progress depended on capital formation through their own savings and labour investments, in co-operation. But to understand properly and fully that increased earnings in the future depended on savings now, people had first to grasp fully that their earnings depended on their own production. That was a necessary link in understanding that their productivity would be increased by improved equipment.

Boiteko has always included, besides really poor people, some rather better off, who have cattle and their own farm lands. Some were engaged

in other activities at home, like brewing traditional beer for sale, and some were anxious to learn a skill in Boiteko which they could practise on their own account at home. Others, mostly the poorer members, were willing to regard Boiteko as their livelihood. They were willing to work longer hours in it and to take part in capital formation through work and savings, on Saturdays. On the other hand, those with interests outside were not so willing, being keen to get to their other work as much and as often as possible. There was a conflict of interests, which could only be reconciled if they formed two distinct groups with different conditions and different levels of rewards. We did not want to establish purely individual incentives and there emerged two separate groups within Boiteko. The A group work 8 hours a day as against the 7 worked by the B group's members. The A group also works 4 hours on Saturdays in capital-formation work, and its members each save 5% of their earnings each week. The share of the surplus of each member of the A group in relation to that of each B-group member is in the ratio of 6 to 4, in recognition of their different conditions of membership.

A record is kept on large sheets of paper on the wall, showing total earnings each week and the earnings of each group. Members are encouraged to discuss any drop in earnings of any one group. If members of the A group do not fulfil their conditions, they come under pressure from other members, especially from those in the B group, who individually receive four-sixths of what the A-group member gets. The whole system is designed to create mutual pressure to increase production and earnings, in the absence of foremen and managers. Each group keeps simple records of sales and production costs; otherwise, all records are kept on the sheets on the wall for all to understand and see.

An elected committee meets once a week to discuss problems and its decisions are reviewed by the general meeting on Friday afternoons.

At one stage, when the currency-voucher system was in operation, there were over 100 active members, but, when the system was changed, there was a careful weeding-out to reduce the numbers to about 45. The most important requirement for this stage of Boiteko's development is that it should have a small number of people prepared to commit themselves to co-operation. Once this small group have a real understanding of Boiteko and can defend its principles, expansion will be possible.

One of the defects of the voucher system, not explicitly explained in this account, was that many of the members regarded the vouchers they received as a salary, paid by me, as the employer. When outside aid was

flowing into Boiteko, people did not take capital formation very seriously. The fact that I was putting money in might have increased the feeling that I was the employer and the source of capital. It did not help to explain that the money was aid from our friends abroad. My own role in Boiteko was a difficult one at the time. The chairman was a fairly old man; he had been elected some years before at a very small village meeting at which I had explained Boiteko. He had never put himself up for re-election. He conducted himself in the manner of a chief; Boiteko was his fief. He came to be much resented and I was frequently called on to intervene. I also felt that I had some responsibility to ensure proper use of external funds and the voucher system needed my close attention. I may have played too great a part in decision-making, which could only increase the feeling that I was the employer. When we abandoned the voucher system, I stopped investing external funds in the project. With the change of systems, there came in time a closer identification of the members with the project. They could now see clearly how the earnings depended on production. They knew exactly how much their goods were selling for and they saw what happened to the money. No one was taking a rake-off. Their participation in capital formation improved a little and this increased their sense of being the owners of the project.

In due course, the old chairman went out with the voucher system. Thereafter, I tried to put greater responsibility on the Committee and the members.

Many of our difficulties in achieving our objectives can be accounted for by the low earnings of the members. True, there had been a rise from R4 to R8 since we abandoned the voucher system and at the same time (ironically enough) stopped investing external aid. But this is certainly not enough to attract many Brigade trainees. We had brought into Boiteko the girls trained in the Textile Workshop, who had struggled on for so long in a small co-operative. They had been doing badly and were unhappy; they were now doing only a little better and were still unhappy. I have from time to time been tempted to invest more in Boiteko, to buy more equipment in the hope of increasing productivity and earnings. If we had initially invested more in equipment and less in buildings, productivity might have been higher. I resisted the temptation. If ever I invested external funds again in Boiteko, I would need to be quite certain that people understood that it was theirs. I would also need to feel that the spirit of co-operation was stronger. There is a certain solidarity amongst the members, but, for the moment, it expresses itself in reluctance to criticise each other for laziness or poor work.

I can see only too clearly what the problems are and I frequently want to take some or other action to put things right. But it is more important to get the members to see the problems themselves. Sometimes a little crisis creates a better opportunity for learning than avoiding the crisis.

One of the factors that gave me a sense of urgency about increasing incomes in Boiteko was my desire to see it attract Brigade graduates. It was the only working model we had for testing out the various objectives that we had set for it. We are about to create new models in two other villages, where we can avoid some of the mistakes that were inevitable in the first experiment. If we have more working models, I shall be less anxious than I was when the Serowe Boiteko was the only one we had.

Freed of anxiety, I might recognise that the wisest course for me was to concentrate on and strengthen my educational role in Boiteko. This means continuing the search for better methods of teaching people—methods that do not rely only on formalised instruction. These methods may be visual and oral aids, drama, debates, discussions or simply the system and the way in which it operates, creating a new reality in people's lives to shape, perhaps, a new consciousness.

Training of instructors

If Brigades are to expand, we shall need more technical instructors, managers and organisers, co-ordinators and Brigade academic teachers. We might find ways of overcoming all the other impediments to expansion and then find that the main bottleneck was the lack of instructors.

A brief look at the possible dimensions of the problem may be useful. The programme envisaged in Table 6, for 10 centres and 60 villages alone, would require instructors both for Brigades and for village co-operatives in a wide range of skills. It would require something like 90 farmers, 30 tanners, 30 dressmakers, 30 spinners, weavers and knitters, 30 builders, 30 carpenters, 30 rural mechanics, 20 food-processors, 20 potters and 40 miscellaneous industrial instructors. It might also require some 40 managers (though in the smaller Brigades senior instructors might be able to manage their Brigades), 20 bookkeepers and 20 clerks. It would need some 20 academic teachers. In addition, 10 co-ordinators would be required, especially to organise the six villages served by each centre, and they would need assistants. For 10 centres alone, the total staff requirements might be of the order of 500 trained people. We cannot rely only on former Brigade trainees to be instructors. Each Brigade needs at least one well-qualified, experienced and competent instructor,

if the Brigades are to make an adequate job of the training. In some cases, more than one instructor of such calibre will be needed by particular Brigades.

A Brigade staff-training programme is under active consideration by the Ministry of Education. Existing Government technical-training and teacher-training facilities will be used by a small group of specialist Brigade staff-trainers. Funds are available to send a few people for training in other African countries.

The Brigade staff-trainers will also use the facilities of some of the existing Brigades. In any future programme, Brigades may need the services of volunteers and other expatriates, until sufficient instructors are available from Botswana itself. Brigade centres can themselves help in the process. It has been most encouraging that the Serowe Farmers' Brigade, Textile Workshop, Builders' Brigade and Tanners' Brigade are all using instructors who were previously trainees. Whilst these staff members are not of the highest calibre, most of them are good and they have some understanding of Brigades and their constraints. Their skills can be upgraded by concentrated courses with the Brigade staff-trainers. This approach may provide a good source of instructors.

In Serowe we have set up an Advanced Course for Builders and Carpenters, mainly with a view to training our own future instructors. We could, if need be, supplement the efforts of the staff-trainers in respect of other skills.

There are two other possible measures that could be taken with regard to a training programme for instructors. One would lie in using the type of school which I shall describe in Chapter 4—the cost-covering school. The other would be to establish one or more centres like that described in Table 6, specifically for the purpose of training instructors for an expansion programme. After two or three years of ordinary training, the Brigade staff-trainers would move in. These future instructors might be specially selected from among the best trainees at present in the Brigades throughout the country.

We must remember, however, that more than 10 new centres will be needed to make any real impact on the school-leaver and under-employment problem. In addition, for every 10 centres, considerable additional Government staff would be needed, such as auditors, inspectors, controllers, programme administrators, clerks and executive officers. All this, I believe, strengthens the case for the approach to secondary education which I described at the end of Chapter 1, the discussion of which I pursue in Chapter 4.

The role of the innovator and the co-ordinator

One of the conditions of replicability not previously mentioned is that the Brigades should not depend too much on exceptional individual organisers and innovators, without whom they would collapse. As founder of the Brigades and pioneer of the concept, at least of the form which it took in Botswana, I was naturally very strongly committed to its success and inevitably deeply involved in policy formulation. It was, I think, vital in the early days not only that Brigade staff were able to consult me but that I was able to guide and direct them, given the fact that Brigades were new and unique, that there were few precedents to guide us all in making decisions and that all aspects of Brigade policy were evolving all the time.

The range of matters in which I have been involved covered specialist technical problems, marketing and sales, contracts, productivity, quality control, inspection, testing, personnel, discipline, vocational theory and academic teaching (both content and methods), management, organisation and accounting, relations between school and Brigades, relations amongst various Brigades, settlement of trainees and post-training employment arrangements, recruitment of both trainees and staff, staff-training, policy, public relations, fund-raising, relations with the Government, the District Councils and traditional authority, extension work in the villages, and experimentation in the use of resources and in finding simple tools and techniques of production.

There are now about 1 000 people involved in Brigades in Botswana, as administrators, members of controlling boards, staff and trainees. There are more than 100 involved in Boiteko and similar training and employment programmes at centres other than Serowe and administered by people other than myself. Some of the Brigade centres have been functioning very well, some quite well and some badly. The numbers involved in Brigades are not very large, but they are large enough to be a cross-section of society and to reflect many of the attitudes of society. The work we have so far done is far-ranging. We have encountered many of the basic problems of the country; we have experimented with solutions, discovered new problems and revised our approaches. We have had a considerable amount of experience from which to draw some conclusions and to lay down some guidelines. Of course, we have not discovered all the problems, but neither have we stopped thinking.

Virginia Makins, whose report on Brigade teaching is summarised in Appendix 5, wrote after she had been to Swaneng Hill:

Visiting there, one is caught in complex currents of innovation, doubts, doctrines, hopes and sometimes bitter arguments, causing shocks, illuminating flashes and short-circuits. In this electric storm, people have been facing problems which many post-primary youth-training programmes in other countries have not yet explicitly recognised.

The Government set up the National Brigade Co-ordinating Committee (NBCC) to advise the Minister of Education on Brigade policy and Brigade problems. There are several specialist sub-committees for different industrial activities, for example, farming and building. The NBCC's functions include fund-raising, vetting of plans for new Brigades and expansion of existing Brigades, exchange of information and ideas among the centres, including technical information and technical advice, assistance with planning and staff recruitment, auditing, finding markets and contracts (especially Government and local-government contracts), and co-ordination of policy. The NBCC has laid down guidelines for cost-covering. It has an executive which meets monthly and on which Brigade centres are represented and officials from a number of Ministries are included. It has commissioned consultants and evaluation experts.

Certainly, some very exceptional people were involved in the pioneering work, people like David Inger at Molepolole, Ian Smith at Mochudi, Richard Holloway at Maun, Robert Oakeshott, and Batswana like Henderson Tlhoiwe, Felix Kgosidintsi and Daniel Jankie.

It was of value that much of the initial work was supported by donor agencies abroad with sufficient flexibility in their regulations and bureaucracy to be able to provide initial capital for an untried programme. This applies more especially to SIDA, Danida, Norad, War on Want, Oxfam, the Bernard van Leer Foundation and Bread for the World. The Botswana Christian Council, too, played an important role in channelling support from a number of external agencies, support that was and still is crucial to the launching and consolidation of Brigades.

There may have been moments of ambivalence, but, by and large, the Government, and more especially the politicians, have thrown their weight behind the programme. Botswana has four political parties and all have accepted the Brigades. So have the trade unions. Most important of all, the Government has been willing to permit wide-ranging experimentation, and to endure the sniping and sometimes carping of mavericks like myself.

I think that in the immediate future the Brigades will benefit greatly from the continued advice and experience of the innovators, and I have no doubt that there will always be a useful role for the kind of people

who were involved as pioneers. It will be important that such people are involved to do the basic thinking, as new problems are identified, and to ensure that the programmes continue to respect the principles that will ensure their replicability. Brigades might benefit from being allowed to operate independently of Government, with controlling boards on which Government is represented. This is, in fact, the intention of the Ministry of Education, which is devising suitable systems for the supervision of Brigade administration.

In the next stage of consolidation and expansion, we shall need thoughtful, dedicated and capable organisers. Some may initially be volunteers or experts, and we need to find suitable Batswana. Brigades will not be able to afford their salaries, in general, and subsidies will almost certainly be necessary. (This was foreseen in Table 6.)

Land and resources

Initially, when our approach to employment creation was based on the settlement of trainees in single-industry co-operatives, we encountered difficulties in finding land. It appeared that this might be a constraint on expansion. Since then, the system of allocation of land has changed. Land Boards have been set up to do the job instead of the chiefs. Though there was, immediately after, a land grab by the rich and influential, the Government appears to be on the verge of declaring a rational and quite radical land-use policy. Provided that Brigades have the support of the people in the villages from which they select trainees and in which they wish to establish co-operatives, it should not be difficult to secure land in the future. The onus is on the Brigades to do the necessary public-relations work in the village. I have recently been involved in meetings in two small villages, and it was not difficult to find general support for our proposals.

Whilst, in general, our approach is to maximise the use of local resources, in the rurally oriented Brigades and the village projects they serve, there clearly have to be exceptions. Sometimes, the resources needed for a particular activity may not be available near a Brigade centre or a village co-operative. If the necessary raw materials are cheap and can be transported inexpensively, then the operation will be tried, but this is not always possible in remote villages. We may have to abandon certain industrial activities, like pottery, in some villages, but there may be some other raw material in the neighbourhood, on which a different type of productive activity can be based.

Problems of administration and size

Every Brigade needs an element of business administration and management other than technical management. There have been some discussions amongst those of us engaged in Brigade work about how this can best be done. One view is that business management should be provided for a number of Brigades by a specialist business manager rather than by the technical teachers. It is suggested that technicians should not be bogged down with accounts, recruitment, sales, post-training arrangements or similar purely administrative, business and non-technical matters. The argument continues that, if Brigades are to cover costs, technical teachers should be able to concentrate entirely on production and technical teaching.

Another view is that Brigades should be kept small and that the technician should also be the business manager and, where possible, should do some of the non-technical teaching. It is argued that one person doing these various tasks can integrate the teaching most effectively. The Serowe Electrical Brigade has done this to very good effect, but it assumes a considerable degree of versatility and sophistication—qualities which are not always available.

Certainly, business administration and management in Brigades needs to be as simple as possible, so that trainees can be fully involved in it, especially if we expect them to manage their own businesses after training. Both the Serowe Farmers' Brigade and Serowe Electrical have been able to involve trainees in accounting and management. The Farmers' Brigade now has one of its former trainees fully responsible for its accounting. This necessitates fairly small administrative units and a Brigade unit involving 60 trainees might be the maximum from this point of view. For other reasons, such as morale and discipline, smaller units are desirable.

If it is right that Brigade technicians should not be bogged down in business management, they should certainly be fully aware of what is going on in their Brigades and they should have information about management at their fingertips. Probably the most satisfactory compromise, taking all the various factors into account, is that business management and accounting for a number of Brigades, using simple methods, should be a specialist responsibility but that not only the technical managers but also the academic teachers should be fully informed about management and exchange ideas, so that the teaching of the trainees in all aspects, technical, business and academic, should integrate as many different factors as possible.

Recruitment

As the age of entry to primary school in Botswana has been lowered, it is possible that increasingly in the future the Brigades will find boys and gils of 13 and 14 seeking admission. It will be difficult to get children of this age to produce enough to cover costs. Most Brigade managers and teachers feel that the entry age should not be lower than 16. Some want it to be much higher. The consequence will, of course, be that many young people leaving primary school will be idle for two or three years until they reach the minimum entry age. But, at present, while we cannot absorb everyone who applies, it is no bad thing for the Brigades to admit people who have had to spend two to three years discovering that there are no alternatives. They will be more likely to accept the Brigade programme.

A ceiling age of 17 years has now been placed on the entry age to Botswana secondary schools. This will mean that every parent will want his children to enter primary school at the earliest age allowed, in order to qualify for secondary-school selection. For 70% to 75% of the children, there is no hope of admission to secondary school and, in order to have a chance to qualify, they will later have to spend three idle years. If Brigades expand in the future and admit more trainees, a solution to this problem may lie in allowing a wider range of entry age to primary school, say, from six to nine, and raising the age for secondary-school entry from 17 to 19, thus removing the pressure on parents to get their children into primary school at as early an age as possible, with the unfortunate consequence that the great majority who are not selected for secondary school are too young to work or to enter Brigades when they leave primary school. If the secondary schools were willing to admit a reasonable proportion of these older people, then the pressure on everyone to get their children into primary school at the age of six would be even more effectively relieved.

Brigades and primary schools

There is no doubt that Brigade training would be most effective if it were preceded by a 7-year primary course, in which agriculture, rural science, science, mathematics, a practical activity, and some form of civics and development studies were taught, more especially in the upper stages of primary schooling. This would lay a better foundation for Brigade training and teaching.

If primary education is followed by Brigade training, the entrance age should be fixed at eight years; the first four years are probably too early to attempt any actual vocational training, but this can be stepped up year by year.

Non-vocational teaching in Brigades

The Brigade system, with its necessary heavy emphasis on productive work to cover costs, is primarily a vocational training. However, Brigades attempt to provide a certain amount of non-vocational teaching, in addition to the theory associated with the practical skill activity. Four-fifths of a trainee's time is spent working in his trade, producing goods and services for sale. The time available for the non-vocational teaching (and theory) is limited to one day a week. It is limited because the productive work has to cover the cost of it. The more time spent in the classroom, the higher the cost, and the less time for production to meet the higher cost.

If the replicability of Brigades is to be worth while, then, in my view, they must provide a measure of academic education in the programme as one of the "regular" costs to be covered.

During the early period of "integration" of Swaneng Brigades and School, the Brigade academic teaching was undertaken by the staff at Swaneng Hill School on a day-release basis, and we saw that many of the teachers tended, being rushed, simply to modify what they were doing in the secondary school. Furthermore, when the school was on holiday, the Brigades had no teachers. It seemed sensible to recruit specialist Brigade teachers to concentrate entirely on that work. We have done that in Serowe and two such volunteer specialist teachers are teaching Mathematics and Science, and Development Studies and English. The immediate goal we have set for ourselves, in reviewing Brigade teaching in Serowe, is to try to determine precisely what it is within the functions of any educational institution—its activities, curriculum and organisation, the methods of teaching, the behaviour of the teachers, and the influence of the peer group—that enables people to learn and to accumulate knowledge, that develops minds and personal qualities, and that determines the way people act and behave. It may be that other factors play a part in this educational process, within the institution and outside of it, at home, in society, in work and play groups, in organised and informal associations. We need to locate and isolate the most effective factors in the learning process, to ensure that in Brigade models and Boiteko models

we shall apply them in a manner that bears always in mind the need for wider replication. We should be on the look-out for means of short-circuiting the lengthy and time-consuming curricula of conventional academic education. My initial thinking on some aspects of this is set out in an earlier paper which I wrote about Brigade academic teaching.

One of the aims of the academic teaching given to trainees ought to be to help, if possible, to increase their productive skills and efficiency. In formulating other aims, we must consider how they will earn their livings. Will there be paid jobs for them, more especially as the system trains more and more young people? Our experience has suggested to us that it is not enough to give trainees a productive skill without giving them some understanding of the economy which they will enter, and without convincing most of them that they will have to create their own employment, and preparing and training them to be able to do so.

I have elsewhere suggested that there are certain human qualities recognised by most cultures as admirable and worth inculcating or instilling, if it is possible to do so. I thought that initiative, reliability, self-discipline, loyalty to agreed communal objectives, integrity, moral courage, compassion, and rational and scientific thinking ought to be among the objectives of non-vocational training. Many of these qualities can be learned from productive and practical work and through the real involvement of trainees in the running of the Brigades. And this involvement of trainees in management and decision-making ought to prepare them for working co-operatively and for creating their own employment, once they have left the Brigades.

Our objectives in Brigade academic teaching are therefore as follows. We want, firstly, to improve the skill and efficiency of trainees, as producers. We want, secondly, to make them aware of the economy and their role in it, and to prepare them to undertake production on their own, preferably in co-operatives. And, thirdly, we want to inculcate some of the worthwhile qualities listed above, in so far as it is possible to do so through academic teaching. Some of these qualities can in fact make trainees better producers and better members of settlements and co-operatives, indeed of society as a whole.

We have probably always been aware of these objectives, and I think that in our choice of the four subject disciplines, English, Mathematics, Science and Development Studies, we thought we had the best vehicles for achieving our aims. We had perhaps rather ambitious hopes; I certainly recall myself hoping that we could, amongst other things, make

trainees more rational and thoughtful, and equip them better for taking initiatives and making sound decisions, through teaching in these four subject disciplines. We are now in doubt whether these are realistic aims. In Mathematics and Science we came nearest to achieving some of our aims, whilst the English now suffers from having no commonly accepted purpose or aim. We must beware of the tendency simply to follow a familiar sequence of teaching of the discipline, rather in the form of modified secondary-school teaching.

There is also the problem that, by sticking to rigidly divided periods for various subject disciplines, the trainees themselves come to expect a particular approach from the teacher in regard to both content and method. This is especially true in English.

Looking at the basic objectives of Brigade academic teaching, as set out earlier, I feel that there are more sensible criteria for the arrangement and classification of subject matter for this teaching than is to be found in the subject disciplines. The arrangement I prefer is as follows:

1. Administration of Brigades and co-operatives.
2. Support knowledge for vocational practice and theory.
3. Motivation and orientation and support knowledge.

This proposed arrangement tells us exactly what we need to extract from the various disciplines to achieve our objectives. Administration of Brigades and co-operatives requires, for example, the ability to write letters in English, the ability to read catalogues, to complete forms, to order materials, to write up minutes, to know the procedure of meetings, to know how to send telegrams. It also requires knowledge of costing, estimating and budgeting, pricing, supply and demand, weights and measures, bookkeeping, profit margins, banking. Project teaching of the subject matter under this heading is possible. It should be easy to reconstruct office and management situations involving operations such as costing, estimating and then letter-writing. Real situations can also be reconstructed to give examples of decision-making. While some of the subject matter may be common to all Brigades, even more matter will be of value to specific Brigades alone. Clearly, the subject matter in this category requires close co-ordination between Brigade instructors and teachers.

The second category, support knowledge for vocational practice and theory, also tells us exactly what we need to select from various subjects. Here the emphasis will be very strongly on specialised treatment for each Brigade. Farmers, builders and textile workers need to know different things. At this level, Science and Mathematics teaching are generally satisfactory. Some interdisciplinary project teaching may be possible, but it is

by no means as compelling as in the case of administration. Indeed, some subject matter, say, in biology for farmers might most sensibly be treated within a specific discipline. English can also be introduced under this category. In English, comprehension teaching of texts can use vocational subject matter. Obviously, close co-ordination between Brigade theory teachers and academic teachers is needed here.

Motivation and orientation require a real understanding that there will be a shortage of paid employment, especially if Brigade training expands. Trainees need to know why there is a shortage of secondary-school places, why Brigade training is a feasible, large-scale alternative, why it is necessary to cover costs. A real understanding of all this requires some knowledge of development and production, the role of money, how developed countries have reached their present positions, and how there have been concentrations of wealth in individual hands. This suggests its own selection of material from the Development Studies course. Support knowledge necessarily includes an understanding, for example, of percentages and statistics. Here again, comprehension teaching is necessary, using Development Studies texts, given that the medium of presentation will largely be English. A limited quantity of literature will also be useful under this category. What is necessary is stories or extracts from literature, personalising some of the Development Studies abstracts. If it is ever necessary to talk of the life of the hunters and gatherers, one can bring them to life with stories and also speak a little of their art and way of life.

Our aim of inculcating certain qualities will be achieved by involving trainees in the running of Brigades, by their working co-operatively and also to some extent in the teaching of the three categories.

I have made little mention of purely cultural activities. Some cultural activity should be encouraged for short spells after work, to include singing, drama and possibly art and crafts. This would clearly be optional and could be organised through clubs.

A word needs to be said about language. There is a case to be made for teaching in Setswana if we had enough Batswana teachers, which we have not. It might increase the understanding of the subject matter. Generally speaking, trainees do not want to be taught in Setswana, though no doubt they could be persuaded. In time, we should have more Batswana teachers and both languages could be used. Though trainees will spend most of their lives in villages, we want them to read technical publications and, in running their projects, they will quite frequently use English in communication with the world outside. We might try to promote discussion of matter taught, by the students, in Setswana, in small seminar groups.

The NBCC commissioned Virginia Makins, of the *Times Educational Supplement*, to prepare a report for it on Brigade Teaching. This is summarised in Appendix 5.

The Botswana Ministry of Education is taking steps to find a curriculum-development expert to help to devise syllabuses and curricula suited to the special needs of Brigade training, in respect both of skill theory teaching and non-vocational teaching. We in Serowe hope to be involved in that, and we shall pursue our quest to identify the most important factors, in and out of teaching, which contribute to the learning process.

A wider audience?

In writing this chapter, I have not had only a Botswana audience in mind, although my main pre-occupation has been to contribute to the solution of problems in the country in which I live. The impediments to expanding educational or training programmes that we have identified in Botswana are, however, likely to be encountered in other developing countries which are searching for models capable of multiplication. We may call these models "Brigades" or we may call them by some other name. In poor countries, means have to be found to finance them. There may be countries which have the wealth and all the necessary resources but where the only problem is the re-distribution of wealth. Revolution is overdue there. In most countries, the young are likely to include the most able-bodied in the population. In developed countries, perhaps three out of 10 people are under 18 and seven over 18. In countries like Botswana, five out of 10 are under 18. In the developed world, six adults out of the seven carry the responsibility of educating three young people, and the six are probably in employment and well paid. In the third world, five adults carry the burden of educating five children: few of them are employed and fewer well paid. The skill of youth, like the skill of the rural under-employed, is a resource to be mobilised. Young people can help to finance their own education and job creation.

There seems to be a good case for a system of on-the-job training that pays for itself. Once on that path, the same constraints that we have encountered are likely to be met—capital, marketing, job creation, staff, land and resources, attitudes and aspirations. There may be others.

It has been necessary for me to make my case about replicability and I can only do so in terms of the situation in which I do my work. If my

case cannot be supported in respect of Botswana, then it probably cannot be supported in respect of other situations either. In any case, I want to make my case to a Botswana audience. In doing so, I have had to develop particular models and lines of thought appropriate to my context of work. But I think that some of these measures may be of interest to people in other countries and that the thinking that lies behind it all will, even if the particular measures do not. I hope that it is not unduly presumptuous of me to think so.

Evaluation

The report of Virginia Makins on Brigade academic teaching, to which I referred earlier and which is contained in Appendix 5, and the report of Anthony Martin, contained in Appendix 4, constitute a fairly thorough, independent evaluation of the Brigade programme, though it must be borne in mind that both reports were made quite some time ago. Mr Martin's report, like that of Miss Makins, was commissioned by the National Brigades Co-ordinating Committee.

A guided tour of the Brigades and Boiteko

If the visitor is to see everything happening in the Brigades, he must rise at 5 o'clock in the morning. He will go down to the Farmers' Brigade, where he will find the trainees already up and about. Some of them have been out to the pastures to bring the dairy cows in for milking. The big Friesland and smaller Jersey cattle will be near the cowshed. The trainees may be checking on their condition to see if any are ill or on heat. Later in the day, other trainees will artificially inseminate any on heat. The on-duty trainees will report to the dairy supervisor, Tlhagiso Mpusang, a former trainee, any illness they notice. The trainees will have cleaned out the cowshed after milking the night before and they will have placed supplementary feeds in the troughs at the front of the milking berths. They will milk by hand, taking care to wash their hands before. Other trainees will collect the milk, weigh it, record it and test it in the little dairy laboratory. They will pasteurise it in sealed milk cans immersed in boiling water for some minutes. They will test it again and then the trainees in the dairy will take it over from those on duty in the cowshed. In the dairy, the trainees will cool and package it, and then store it in the cold room, until Molefhe, the salesman and a former trainee, despatches it with trainees on the mule-cart milk run into Serowe. The goats will be

turned out of their enclosures to browse off the thorn bushes. If the time is autumn, the Angora goats will be kept in the enclosure because of the grass burs that mat and spoil their fleece; hay will be brought to them by the trainee in charge.

The visitor will walk across to the poultry sheds, where he will find several hundred hens in battery cages. A trainee is feeding and watering them, cleaning the cages, collecting and recording the eggs (so that birds can be culled when their laying decreases). The eggs are taken to the cold store room and the manure is put on the compost heap along with the cow manure washed out of the cowshed.

In the garden, trainees are digging new garden beds. They dig out two feet of soil and put it back with gravel, manure and fertiliser. Some beds are being watered by drip irrigation. Each bed is four feet by twelve, and the garden has beetroots, carrots, spinach, cabbages, tomatoes, onions, leeks, cauliflowers and other vegetables, depending on the time of the year. A trainee may be collecting, weighing and pricing vegetables ready for delivery in the town. In a little field just beyond the garden, there is a crop of spineless cactus and oldman saltbush, which grow well on very little rain; a trainee may be cutting some to feed to the Angora goats. There may be some Boiteko people shearing the Angora goats. Phenyo, a former trainee, will be preparing plastic bags for seedlings in his little nursery. Different plants will be growing in these bags in a shelter shaded by plastic.

If the visitor walks around the 1 000-acre farm, he will notice that it has been fenced off into a number of different grazing camps, all numbered on the map of the farm. Trainees have erected the fences with poles cut from the bush and boiled in used engine oil to protect them against white ants. The visitor will notice the anti-erosion measures in the gulleys, stone gabions that slow the flood and trap silt and soil, built by trainees and students from the school (during manual-work periods). Vernon Gibberd himself may be working in one of these right now, before breakfast. A huge donga, which runs through a gap in the line of low hills that mark the farm's southern boundary and separate it from Swaneng Hill School, spills out onto fields on the farm that were cleared of bush by trainees in the early days. Very large earth banks have been built across this little flood-plain to slow down and spread the rainwater run-off. The visitor will notice how tall the grass is and how thick, and that it is winning the battle against bush encroachment. A walk along one of the perimeter fences will show how bare and badly overgrazed the land outside is.

If it is summer and there has been good rainfall, sunflowers may be growing in one of the fields. The dam built in another gap in the line of hills will be full on the Swaneng Hill School side. There will probably be a field of potatoes, which trainees are irrigating.

The visitor will find one of the trainees cooking soft maize-meal porridge for breakfast in a wood and iron shelter next to the dormitory, with its high, thatched roof. Alison Kirton may be teaching some of the trainees English and Development Studies in the thatched classroom nearby, if it is their day for lessons. Later in the day, Vernon Gibberd may come there and, with Tlhagiso Mpusang, may give an agricultural-theory lesson.

The visitor may drive by Land-rover for 20 miles along sand tracks and bumpy, winding, bush roads and across dongas to the 14 000-acre beef ranch. He will find that it has been fenced off by trainees into a number of camps. The cattle graze in one of these camps for a few days and then move to another, so that the first camp will not be grazed again for 45 days. Two trainees will be having a spell on the ranch and working there under Khumo, the ranch supervisor. Sometime during the day, he may explain to them (and the visitor) the non-selective grazing techniques being used. The several hundred cattle will be in fairly good condition whatever the time of the year, grazing off the green grass that grows on the sandveld after the rains or browsing off the short bush.

Builders

Most of the Builders' Brigade and Carpenters' Brigade trainees will have had the breakfast that one of them has cooked and left the dormitories they built for themselves on the school site in the days of "integration". They will have gone off by lorry to the various building sites in Serowe. (All the Brigades share the ownership of two lorries with the Swaneng Consumers' Co-operative Society.) Some trainees will be working on a house for someone in Serowe. Some will be building the Swaneng Co-operative Society's new hotel and butchery. Some will be building a new carpentry workshop for the Carpenters' Brigade, at the Brigade site in the middle of Serowe. Trainees will be seen at the different sites, digging foundation trenches, mixing and pouring concrete, mixing mortar, laying bricks, plastering, glazing, painting, fitting doors, making rafters for roofs, putting them up on the walls, and fixing corrugated-iron sheets to the roof purlins. The stonemasons will be building with the grey-black basalt stone found on the hills, making jig-saw-

patterned rondavel walls for rooms at the new hotel, or they may be cutting and dressing sandstone for use in a building.

Some of the carpenters will be working in their shelter behind their dormitory on the school site. They will be working at their benches on the hard-packed earth floor, making tables, chairs, crutches, coffins, cupboards and desks that someone or other in Serowe has ordered or simply for sale in the Brigade market in town.

One of the two managers of the Builders' and Carpenters' Brigades may be in their prefabricated office on the school site, talking to a customer about a plan. John Kirton, the Brigades' volunteer architect, who is also paid from its revenue, may be at his drawing board, assisted by two or three Advanced Building course trainees, preparing a plan for a new building for a customer, or they may have gone down to set out a building on the ground somewhere.

Some of the trainees may be in a classroom borrowed from the school (until the Brigades' own classrooms have been built on the Brigade site) if it is their day for lessons, learning Mathematics and Science from Martha Mathuba (a former Shashe River School student) or Building Theory from Thuso Kabelo (both Batswana).

The Textile Workshop

The girls will have had an assembly with their manager, Mmamodibe Raleru, who was once a Swaneng Hill student, and will have gone to their looms in the weaving room or their machines in the sewing room or the pattern and cutting room or to the screen-printing workshop. In the weaving room, some will be washing mohair from the Angora goats or karakul bought from Bokspits in the Kalahari. Others will be carding and spinning the wool on spinning wheels and spindles, and some will be dyeing. A few will be at the looms, weaving carpets, rugs, tapestries or blankets, with colours and designs which they chose or made with their instructor, Gabs Sekwati, herself a former trainee.

In the pattern room, cloth will be cut for taking to the sewing room. There girls will be making it up into school uniforms to meet orders or into dresses, shirts and other garments for sale at the Brigade market.

In the screen-printing workshop, lengths of cloth from bales will be stretched over the 30-foot printing table. Trainees will be using silk screens to put their own typically Botswana designs onto the cloth. Yards of different coloured cloths will be hanging from racks fixed to the roof. Some trainees will be cleaning silk screens or preparing new ones or mixing inks of different colours. Some will be putting the printed cloth

into the fixing oven to make the dyes fast. There will be bales of printed cloth ready for despatch to Botswanacraft in Gaborone, where it will be sold.

Mmamodibe Raleru may be looking over accounts with the Brigades' accountant, Ralph Brown, a volunteer from Canada. Or she may be discussing the lesson that Alison Kirton is going to give to the trainees whose turn it is for lessons on this day. Or she may be talking about orders and sales to Frank Taylor, the Marketing and Management Consultant to the Brigades. Or she may be attending one of the monthly meetings of the Serowe Brigade Development Trust's Board, of which she is a member, presenting a report or the accounts or discussing a problem of discipline.

Serowe Engineering and Serowe Electrical

In the big workshop, trainee employees may be turning some metal on a lathe or grinding a crankshaft, watched by the Manager, Aaron Kibel. Some may be bending and cutting angle iron or steel tube or welding school furniture for the District Council's 100 primary schools. Another may be tool-making with Aaron Kibel.

In the garage a few trainees will be working with one of the three mechanics on a car that a customer has brought in for repairs.

Serowe Electrical may be wiring up the new hotel for lighting or installing a generator and putting in the switchboxes. Or they may be putting an electric submersible pump down into someone's borehole. Or they may be having lessons from Peter Mosotho, their Motswana instructor.

The Tannery

In their building, constructed of sandstone and basalt, trainees may be salting skins, putting them to soak in lime pits, using lime bought from Boiteko. Or they may be taking the hair off a hide that has been soaked and putting it into the waste from local brewers for softening. Or they may be soaking hides and skins in the tanning pits, using either imported chemicals or tanning agents they have collected themselves.

Robert Kgasa, the Motswana Manager and instructor, may be in another part of the building, showing a trainee how to cut leather for a shoe or how to stitch uppers and soles together.

Boiteko

Here the visitor may see people working in their attractive stone and thatch buildings. Women may be spinning, or dyeing wool in large three-legged pots, using bright, warm colours, or knitting jerseys or making a blanket or shawl on a simple weaving frame. Someone may be carding wool on one of the hand-operated carding cylinders made by Marke Blackmore, our inventive volunteer researcher. Yet others may be making dresses on the two sewing machines, and a young girl will be making multi-coloured rag rugs from waste cloth. Or she may be tie-dyeing some cloth.

Lime will be burning in the lime-kiln, and the burner will slake it, sieve it and bag it, ready for sale. Neo, a young man, will be developing photographs which he has taken of people in Serowe. In the brewery, they will be making beer, ginger beer and other soft drinks. In the brick-field, four men will be mixing clays and earth and moulding the bricks in wooden moulds. Or they may be stacking the bricks into a kiln for burning with wood.

Some lads from the Tanners' Brigade will be tanning leather in the Tannery or making shoes. After a few weeks of earning some money for themselves in Boiteko, they will change places with another group and go back to the Tannery for some more on-the-job training under Robert Kgasa. He may have come down to Boiteko on this day, to see how they are getting on.

In the pottery, the girls will be throwing pots on wheels or mixing glazes or fixing handles to cups or preparing the clays or cutting wood for the wood-fired kiln. Peter and Christine Hawes will be working with them or Peter may be helping the four young members of Boiteko who are responsible for accounts and the share-out to balance the month's accounts and to check the reserves of the different production groups.

In the kitchen, a young woman may be baking bread and ginger biscuits for sale at the Brigade market. Or she may be making jam from gooseberries grown in the garden. In the garden, they may be cleaning out the chicken house, digging beds, watering or planting. One of the young men may have gone off to hawk vegetables.

Leisure

The favourite leisure activity of the boys is football and on most afternoons after work, trainees will be practising or playing or just watching it. The Farmers cleared their own field and the Builders either play on the school ground or, if students are using it, on a field near a primary

school close by. The girls play basket-ball on a pitch they made for themselves.

In the evenings, trainees may be watching an educational film or more recently taking part in a discussion or rehearsing a play in Setswana. Like most Batswana, they enjoy sitting outside and conversing on warm summer evenings.

CHAPTER 4

Secondary Education

The key to solving problems of job shortage is not in the hands of the educationalist alone. Reforms in education will not by themselves create jobs. Once there is a policy and once there are plans for job creation, the educationalist can respond to these by making appropriate changes in the schools.

The role of the educationalist is not only to prepare people for employment. Education has other objectives. In one of my earlier published papers, I attempted to formulate my ideal of education.

> My own ideal of education is that it should develop to the full the personality, skills and intellect of *every* individual as a member of society; it should encourage the individual to acknowledge his obligations to society; and education should enable everyone to liberate himself from want. It should create fully conscious men, in the recognition that men are political, economic, social and cultural beings, and it should give them the ability to control the environment but the sensitivity not to destroy it. There are accumulated wisdoms, values, knowledge and artistic expressions over the whole range of human experience which each generation and each society will want to transmit, though some selectivity and bias may be inevitable.

In general, the educationalist usually responds also to other demands made by society. These relate to what, in Chapter 1, I called the non-pedagogical functions of the school. They concern the quality of the buildings, the feeding of students and the quality of the food, the provision of residential accommodation, custodianship, and the behaviour, dress and manners expected of members of the middle class. Of course, the content of education itself, in conventional schools, is politically highly charged. If I am correct in seeing the school as the seminary of the middle class, then that is one of the places where it suckles, grooms, moulds and indoctrinates its young, and that is reflected in the content of education as well as in the non-pedagogic functions of the school.

The expansion of Brigades and Boitekos would be a major step towards

providing education on a massive scale. But I recognise that these are not the best places for preparing people for high-level skill training and professional education. The expansion of Brigades and Boitekos and the implementation of the dual strategy of modernised and popularly-based development will create an ever-increasing need for people with high-level skills and knowledge. If we are to expand secondary education very rapidly to meet this need, we must devise a less expensive model, capable of multiplication, and divert a substantial proportion of its students towards self-employment and control of management and capital. This model will prune away a great many of the non-pedagogical functions, and it may well trim the educational function itself.

The school

I would like to look first at the possible vocational objectives of secondary education. The secondary system usually divides upper and lower school by an examination that students take after two or three years. For many, lower secondary education is terminal and it may become so for many more, as the system expands. Generally speaking, the objectives of both levels of secondary education which may be regarded as being vocational are as follows:

(i) To equip students for certain categories of civil-service jobs and private-sector jobs;

(ii) To prepare students for further and higher education;

(iii) To orientate students towards, and possibly prepare them for, subsequent agricultural, technical, commercial or teacher training;

(iv) To prepare students who do not find further training or employment opportunities for self-employment.

The conventional system will be sifting candidates for further secondary and higher education, and coaching and preparing them for the sifting process. The objectives of secondary education, for both those who leave school and those who continue, must include;

(*a*) Developing the skills, personalities and intellect of the individuals;

(*b*) Transmitting knowledge and certain social and cultural values.

Most educational administrators will accept, as further objectives, that the facilities of schools should be as fully utilised as possible and that education or some form of training should be provided from the resources available for as many people as possible. In what ways can the school respond to these objectives as institutions?

(i) Through the curriculum;
(ii) Through methods of teaching;
(iii) Through staff-assisted student activities;
(iv) Through the organisation of the school;
(v) Through the relationship with the community.

What are the factors which influence the achievement of these various objectives through the school system? They are, I think, as follows:

(*a*) Motivation and attitudes of educational administrators, principals, staff, students and parents;
(*b*) Turnover of staff;
(*c*) Awareness of all concerned of what possibilities are open to them;
(*d*) Syllabuses and examinations;
(*e*) Availability of specialist skills among staff;
(*f*) The goals and aims of the society;
(*g*) The scope and nature of the country's employment-creation programme;
(*h*) The size of schools.

I have two aims in this chapter. One is to assess the various measures which we tried to apply at Swaneng Hill School, to see which of them, if any, can be applied throughout the school system by a Government that wants to make changes. My other aim is to discuss the design of the vanguard models for possible multiplication when the climate of opinion is ripe. I hope that, if the model succeeds, that will in itself help to create a more favourable climate of opinion for really radical change.

Changes in the whole school system

In considering the applicability of various measures for reform of the school system as a whole, I would like to make a few observations. I do not think that many of the reforms we tried at Swaneng Hill School would work if those who were to implement the changes did not believe in them or if they had not thought them through fully. I do not think that they would work if applied by authoritarians. Example is better than precept and whatever message would-be reformers want to convey to students should not be undermined by a different reality. Changes in curriculum content may not be effective in achieving objectives, without changes in method. We need to know a little about the likely socio-economic outlook of those in charge of reform. If middle-class values and attitudes are strongly held and felt, we shall find it reflected in

strong views, not only about the content of teaching and about methods but also about the school's non-pedagogic functions. It is necessary to recognise the pre-occupation of students with their personal future; measures for reform should, whenever possible, be applied in a manner which recognises this factor. There are economies of scale in large institutions, but bigness is not conducive to reform. If the economic considerations are the determinant ones, then some really effective means of subdividing the school into smaller units needs to be devised.

The case for a broad and diversified curriculum is a strong one and there seems to me no reason why it cannot be applied throughout a school system, if the necessary staff to teach all the subjects properly can be found. Workshops and equipment need not, in my experience, be unduly expensive. The case for Development Studies within the curriculum is argued separately in the second half of this chapter (cf. page 155). There, the case for paring syllabuses is also made, along with a tentative case for an integration of several disciplines into Cultural Studies.

Attempts to give students greater responsibility probably cannot be forced upon the entire school system. Their success will depend on the personalities of individual headmasters of schools. It may involve willingness to tolerate criticism. I do not know many people who really enjoy being criticised, however, and those who tolerate criticisms do so only because their general outlook has shown them the wisdom and necessity for it. There are always risks involved in this effort, but I think that they are worth running. Equally worth the risk is a policy of giving the staff opportunities to participate in decision-making, provided there is some stability. There is unlikely to be in countries which rely heavily on expatriate teachers in their school systems. Still, I think that the machinery we devised at Swaneng Hill School, for greater participation rather than democracy, is well worth trying. Certainly, regular seminars involving administrators, principals, staff and school governors are very valuable, if well planned.

I have suggested that changes in curriculum and content may not be effective, if they are not accompanied by changes in method. I said very little about teaching method in Chapter 1. For a long while, I had a number of critics who asked how self-reliance, initiative and original thinking could be achieved, if conventional discipline was maintained in the classroom; if lectures, chalk-and-talk and written notes were too heavily relied on; if the traditional classroom arrangements were preserved, with ordered rows of desks and the teacher in front; all this

emphasised the teacher's active role and the student's passive role. Note-taking and supervised evening studies, it was said, put the onus on the teacher and to a corresponding degree removed it from the student. I have come more and more to see the validity of some of these arguments. I can only say that further enquiry in this area is on my own agenda. In relation to the school system, the individual personalities of headmasters will be the key to the success of new methods.

Productive work in the schools may succeed if it is very closely related to the subjects taught in the schools and if it can be assessed along with a student's other attainments, if need be, even for examination purposes.

There is no doubt that student labour in the school can save costs, though it was not the only factor in achieving this either at Swaneng Hill or Shashe River Schools. As important—perhaps more important—was the fact that the Builders' Brigades built many of the buildings. Their prices are generally lower than those of contractors. Their standards are much higher than those of students who spend much less time on learning how to build. This, incidentally, supports the case for Brigades. Tables 7 *a* and 7 *b* show the capital and recurrent costs of the Swaneng Hill and Shashe River Schools respectively, up to and including 1971.

There are some hidden subsidies in respect of salaries of staff at both institutions, for example, Peace Corps volunteers and one or two staff members on Technical Aid Assistance programmes, whose salaries are paid direct to them. The total involved is, however, not substantial and would not, at either institution, increase the cost per student per year by more than R10.

One of the main reasons for the higher recurrent costs of Swaneng Hill School was that there were more members of staff there with families. We had hoped that families might stay longer than single people. In 1969, we also began recruiting heads of departments at Swaneng Hill, who required some inducement in terms of higher salaries. Both these factors contributed to the higher costs.

The total capital expenditure in both schools was, by the end of 1971, R778, 551. This had created secondary-school places for 1 200 students at the beginning of 1972 (and, at Shashe River School, for about 190 Brigade trainees). The *capital* cost per place in the two schools was therefore something in the region of R550. The *recurrent* cost per student year, calculated for both schools, was about R176.

We recognised that the students might resent the demands made on their time by productive and cost-saving labour, if they felt that their

Table 7 *a. Capital and recurrent costs of the Swaneng Hill School (in rands)*

These figures include costs of boarding for nearly 60 % of the students in any year over the whole period. The figures also include the costs of transporting day scholars—40% of the students in any year—to school at a *per capita* figure of R17 per year.

The school offers a widely diversified curriculum. The capital expenditure shown in this table includes the cost of building and equipping several workshops and of providing water and electricity.

Income		Expenditure (not including depreciation)	
Period ending 8.5.1964			
Donated	25 571	Capital	20 812
Revenue	1 528	Recurrent	8 056
Period ending 15.5.1965			
Donated	47 952	Capital	31 731
Revenue	3 403	Recurrent	15 069
Year ending 31.12.1965			
Donated	28 569	Capital	25 694
Revenue	4 846	Recurrent	15 788
Year ending 31.12.1966			
Donated	97 941	Capital	62 390
Revenue	11 691	Recurrent	42 601
Year ending 31.12.1967			
Donated	107 617	Capital	89 988
Revenue	19 544	Recurrent	57 509
Year ending 31.12.1968			
Donated	74 357	Capital	65 686
Revenue	34 644	Recurrent	76 016
Year ending 31.12.1969			
Donated	130 003	Capital	29 440
Revenue	28 646	Recurrent	100 160
Year ending 31.12.1970			
Donated	122 570	Capital	33 382
Revenue	40 280	Recurrent	99 573
Year ending 31.12.1971			
Donated	149 964	Capital	54 428
Revenue	38 836	Recurrent	96 847
Student roll		Total recurrent	
1963	28	expenditure	511 619
1964	77		
1965	137		
1966	225	Cost per student	
1967	300	year	192
1968	415		
1969	420	Total capital	
1970	506	expenditure	413 551
1971	555		
		Capital cost per	
		student (approx.)	660
Total student years	2 663		
		(1972: 625 students)	

Table 7 *b. Capital and recurrent costs of the Shashe River School (in rands)*

Year	Recurrent costs, excluding depreciation	Number of students	Recurrent costs per student per year
1969	32 250	210	160
1970	43 696	365	117
1971	66 401	472	140
	Total capital cost[a]	Number of students and Brigade trainees	Capital cost per student/trainee
1972	365 000	528 Students 195 Brigade trainees	505

[a]This includes the cost of Brigade buldings, plant, equipment and dormitories: Brigade and School are closely integrated at Shashe River School and expenditure has not been broken down as between the two.

work for examinations was adversely affected by it. We were under considerable pressure to ensure that examination results were satisfactory. This somewhat restricted our freedom to experiment in a number of the measures that we attempted to apply. I recall writing in newsletters that our examination results were above average, notwithstanding and despite our experimentation. Table 8 presents a picture of the results at the two schools up to and including 1971.

We would have been in a much stronger and happier position if we had been able to say that our examination results were better *because of* and not *despite* experimentation.

If student participation in productive work had been assessed for examination purposes, we might have achieved a marriage of the two objectives. It should be possible to include in the syllabuses for building science, metalwork, woodwork and technical drawing, the design and execution of plans for school buildings, equipment and furniture. It is equally possible to have an omnibus subject in Industrial Arts, in which a student learns something of each of the various skills. The design and execution of a small building, equipped and furnished, can be assessed. It is also possible to include in Development Studies, the design, execution and reporting of development projects related to the school, the Brigades and the community. A whole class can be involved in these various schemes and projects over two or three years. Students of Agriculture and Home Economics can also participate in production projects. I suggested in Chapter 1 that almost all the school subjects can be given a practical and productive orientation. But this kind of approach requires a great deal of hard work and re-orientation of the teachers. It puts extra burdens on

Table 8. *Swaneng Hill and Shashe River Secondary-school examination results*

Swaneng Hill School	
1964 J.C.	2 seconds, 3 thirds, 4 failed.
1965 J.C.	4 seconds, 9 thirds, 8 failed.
1966 J.C.	7 seconds, 9 thirds, 21 failed.
1966 Cambridge	2 thirds, 7 GCE passes, 3 failed.
1967 J.C.	14 seconds, 17 thirds, 4 failed.
1967 Cambridge	1 first, 9 seconds, 5 thirds, 5 GCE passes, 2 failed.
1968 J.C.	1 first with merit, 23 seconds, 24 thirds, 21 failed.
1968 Cambridge	2 firsts, 8 seconds, 7 thirds, 3 GCE passes, 3 failed.
1969 J.C.	3 firsts, 35 seconds, 28 thirds, 32 failed.
1969 Cambridge	1 first, 5 seconds, 13 thirds, 1 GCE pass, 2 failed.
1970 J.C.	2 firsts, 29 seconds, 53 thirds, 33 failed.
1970 Cambridge	1 first, 7 seconds, 14 thirds, 14 GCE passes, 2 failed.
1971 J.C.	1 first with merit, 4 firsts, 53 seconds, 43 thirds, 28 failed.
1971 Cambridge	1 first, 8 seconds, 15 thirds, 16 GCE passes, 10 failed.
Shashe River School	
1970 J.C.	19 seconds, 36 thirds, 39 failed.
1971 J.C.	5 first, 42 seconds, 38 thirds, 35 failed.

them. The school day may have to be longer. Success depends greatly on the headmaster's own motivation.

The motivation and personality of the headmaster have been mentioned several times as key factors in the success of attempts at reform. The criteria for the selection and appointment of headmasters need careful consideration, and perhaps re-thinking, by would-be reformers. Seminars for headmasters may achieve a degree of re-orientation.

Another crucial factor in the success of reform in this particular area is the attitude of both local administrators and donors of aid. If they are totally inflexible about the standards and quality of facilities and plant in the school, then it will be difficult to bring about the reforms suggested. I am not asking for the abandonment of reasonable standards in regard to safety and soundness of construction and concern about health hazards, attractive appearance and the future cost of maintenance of poorly made plant. There have been complaints on these grounds about both Swaneng Hill and Shashe River Schools. I accompanied an inspection mission from the Ministry of Works to both schools, sometime in early 1970. They demanded some alterations, attention to various construction details, and improved finish; most of these demands were carried out fairly inexpensively and the cost of them is included in the figures for capital shown in Tables 7 *a* and 7 *b*. Apart from a serious crack in the wall of one building at Shashe River School, no structural defects could be found. Robert

Oakeshott and I differed a little over the question of standards; I felt that we should be more attentive to criticism on this score, because we might otherwise endanger many important aspects of our programme of reform.

If productive and manual work were introduced throughout the school system, and not just in isolated schools, the students might be less inclined to resent it. In one of my earlier papers I explained the difficulties that we were encountering on this score in Swaneng Hill School's later phase in this way.

> Students wanted to know the precise area and extent of savings and how these were being used, and this was not always possible to demonstrate immediately. Now that Government is fully subsidising the deficit on running costs, and we will be able to budget in the same way as other schools, we will not be able to say that cost-saving activities in areas of recurrent costs are any more necessary for the survival of *our* schools and for their more rapid growth, than they are for the other aided and Government schools. If Swaneng and Shashe students were compelled to make savings in recurrent costs not expected of other schools, they would want —and be entitled—to know what these were being used for. It would be difficult to dissuade them from believing that they were victims of oppressive discrimination. There may be a better case for capital-cost savings through student work, but even in respect of capital it will be more difficult to make a case than before. We can no longer argue that capital saved is being used for recurrent deficits. We will have to show either that funds raised are insufficient for any particular purpose or that money saved could be used for other purposes. But it would be necessary to demonstrate that what was being done was essential.

The motivation of students is an important question. It cannot be left entirely to the content of the curriculum to achieve. The students will notice the way in which the staff live and conduct themselves, and it will have some bearing on the way in which they respond to the school's message. The students need example as much as they need precept. They also need frequent exhortation, in meaningful terms, about the aims and practices of the school. The school's debating society should be a forum for discussion of the aims and policies. The issues should be live issues and, again, seminars can be useful.

The quality of the facilities which the school offers will affect the outlook of the students. If the students are seated at tables in dining halls and waited on by servants, and if all the cooking and school cleaning are

done by paid employees of the school, these things must affect the view that students acquire of themselves. The would-be reformer must be just as conscious of the effect on his objectives of practice in this respect as of any of the other measures he is considering to achieve his aims.

New models for future multiplication

While the new models should be capable of promoting the ideals of education which I enunciated at the beginning of this chapter, they will be geared primarily to preparing younger people for self-employment. To be capable of wider replication, they must be inexpensive to run, and the cost of establishing them should not be inordinately high.

At the end of Chapter 1, I envisaged two possible approaches. One was a cost-covering school, applying some of the lessons of the Brigades, which prepares most of its trainees for self-employment in production co-operatives. The other was to set up production co-operatives first, and for them to finance an academic entre for their worker-members. It may be that both approaches are worth trying in two different models. We would be breaking new ground, and we can expect to encounter unforeseen problems and difficulties. There is something to be said for simultaneously experimenting along both lines.

I should like to look first at the cost-covering school model, which derives much of its inspiration from Brigades.

Productivity has to be maintained at a certain level to enable the Brigades to pay their way. Instructors and teachers have to be paid. Administrative costs have to be covered and food paid for. The more time spent in the classroom, the higher the cost and the less time for productive work to cover the higher cost. Trainees are obliged, then, to spend a lot of time on production, which—as it happens—is no bad thing, because the best way of learning a skill is not by reading books but by practising it intensively.

It may appear from this that a cost-covering programme is only appropriate for technical training, and that it very much limits or excludes the sort of academic teaching that is necessary in the preparation of people whose training will be long and intensive, such as doctors, architects, engineers, veterinary surgeons, agricultural and industrial research workers, administrators, central bankers, development planners, lawyers and rural innovators.

But this need not be quite so. For one thing, we should not assume that the only way in which young people can learn is from books or in formal classroom situations. A great deal can be learnt about science, for

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example, from practical activities and natural observation. The formation of young characters can take place as much—if not more so—through living and working with others as in any formal teaching situation.

Even within a Brigade type of cost-covering programme, we can go some way towards achieving the main ideal goals of education, namely, to prepare people for life vocationally and socially and to develop their skills, personalities and intellects.

We can also introduce an element of production into the teaching and learning of the academic subjects. The teaching of English, Setswana and Art, for example, can be geared to the production of campaign posters about literacy, village development or the dissemination of information about human and animal health or new agricultural methods. Government or District Councils have to pay for such campaigns. They can make subventions to the schools for services rendered. The teaching of Science can be linked to the production of soap, lime, cement, candles, soft drinks and chemicals or to agricultural or livestock production. In this way, the academic subjects can help to pay for themselves.

Cost-covering would be greatly facilitated by very drastic measures for cost-reduction. We would need to curtail some of the non-pedagogical functions of the school. The success of this experiment would depend on (*a*) a very practical orientation to teaching in all subjects, (*b*) a drastic curtailment and re-organisation of subject matter within the curriculum, (*c*) a flexible timetable, a longer working week and fewer holidays, and (*d*) a radically different approach to standards of student living and to building standards. The programme would need to be carefully explained to both students and parents before any student was admitted and in each case both would have to accept the conditions. The students would probably need to be older, in order to cope with the work load. (Swaneng Hill School has demonstrated that older students do not achieve appreciably worse results than younger ones.) The same would have to apply, at least in the first model, to the staff, who would need to be fairly versatile, very dedicated and carefully selected. The aim should be to achieve *both high academic standards and high standards of technical proficiency* (through technical specialisation).

There should be no problem in achieving a practical orientation in teaching technical subjects, any more than there is in Brigades. Each student should specialise from the earliest moment in one or other such subject, whether it be agriculture, building, woodwork, engineering, tech-

nical drawing, art or industrial or home crafts (including tanning, leatherwork, soapmaking, and food preparation and processing). The aim should be to make the student able to produce high-quality goods as soon as possible. I have already suggested how the teaching of academic subjects, including Science, can also be practically oriented by involving the students in copy-typing for the school and in keeping its records and accounts.

We have inherited curricula from other countries and taught them in the belief that they were essential to developing people's minds and personalities and to preparing them for life vocationally and culturally. The extent and depth of these curricula and the non-pedagogical functions of schooling have demanded an organisation of school life that makes difficult the inclusion of community service, productive work and cost-saving activities by students. These curricula are also costly, requiring highly qualified and often expensive, expatriate teachers. It is necessary thoroughly to question the subject content of all our school subjects and even to re-examine the existing compartmentalisation of various disciplines. There is another reason to re-examine the subject content of existing curricula, and that is that too often what has been taught at school has promoted a cultural alienation from the community. The teaching of literature, music, art and history should not aim simply to displace the cultural experience of society but should attempt to give its own art and culture new means of growth, to place it in a broader human perspective and to create the possibility of blending. For the purposes of discussion of this model, I have in mind a composite subject which can perhaps be called Cultural Studies. My ideas in respect of integrating and curtailing syllabuses are discussed further on page 152.

With less time for their productive work, students will need to be more productive than Brigades are. We need to aim at a higher level of skills than in Brigades and to attempt a higher degree of mechanisation, in order to raise productivity (without, however, undermining Brigade prices). The students of the school may need to start specialising in a particular skill as soon as possible after entry to the school, if they are to produce enough to cover its costs.

In the beginning, a fee may have to be charged, until it is shown that production revenue alone can cover the costs of the institution. Loans may be available for those who cannot afford the fee of R60–R70 per year, depending on the form the student is in. This fee, incidentally, would be lower than that of any of the conventional schools.

The school will never be fully closed during the year. It cannot be, if

there are livestock to be cared for. Holidays will be staggered, so that, when half of the students and staff are on holiday, the other half will be working. This will present organisational and administrative difficulties, but I do not think that they are insoluble.

It is just as important to cut costs as to increase production, because, if costs are higher, production has to be higher still. Student living standards need to be kept down. This applies to food, and to the use of water and electric lighting. Buildings need to be structurally sound, made of local materials wherever possible, but cheap, inexpensive to maintain, simple and easily kept neat and clean. There will be no dormitories and the policy will be to build rondavels in yards near the school. These would be used rent-free by students over a given period, eventually becoming the property of the owner of the yard.

There is no doubt that the secondary school, as at present organised in Botswana, encourages elitist attitudes among students and encourages their alienation from their communities. They are isolated from their communities, relieved from the many chores of home, and taught to think and behave differently from their parents and families. They are well fed and provided with water and lighting at heavily subsidised rates. Many of them are constantly demanding even better standards—at public expense—which would set them even higher above the mass of the people whom they have left behind. The privileges enjoyed by secondary students have been a source of resentment to Brigade trainees.

An experimental, totally self-reliant and cost-covering school would achieve academic excellence and high standards of proficiency alongside social commitment, and it would fit well into a programme of education and training for all through productive work. It would not, by creating privilege for a few, stir up resentment amongst the majority burdened with work and deprived of advantage.

The week's study programme would look something like this:

Weekday Programme

6.00	Ablutions	
6.30– 7.30	Breakfast	
7.30– 9.50	Work or 4 periods	2 hours 20 mins.
9.50–10.05	Break	
10.05– 1.00	Work or 5 periods	2 hours 55 mins.
1.00– 2.00	Lunch	
2.00– 3.45	Work or 3 periods	1 hour 45 mins.
3.45– 3.55	Break	
3.55– 5.05	Work or 2 periods	1 hour 10 mins.
5.15– 6.30	Games or rest	
6.45– 7.30	Supper	

7.40– 9.00	Private study		
9.00–10.00	Clubs, films, slides, reading, etc.		
	14×5×70 periods		5×8 hours 10 mins. = 40 hours 50 mins.
Saturday			
7.45 a.m.– –1.30 p.m.	Alternating between study 9 periods or work with one 30-minute break		5 hours 15 mins.
Weekly total	79 periods	or	46 hours 05 mins.

Below is the sort of curriculum and the sort of timetable that might be followed in the school, over a 5½-day week, probably for 42 weeks a year, with staggered holidays:

	Periods per week	Hours
English	7	4 hours 5 mins.
Mathematics	7	4 hours 5 mins.
Science	7	4 hours 5 mins.
Setswana	3	1 hours 45 mins.
Development and Social Studies	7	4 hours 5 mins.
Cultural Studies	6	3 hours 30 mins.
		21 hours 35 mins.

	Periods	Hours
Practical (including Commercial Subjects and productive work)	35	20 hours 25 mins.
Technical Theory	7	4 hours 5 mins.
Total	79 periods	46 hours 05 mins.

The subjects taken by students, in addition to their technical training, would be English, Mathematics, Science, Setswana, Development Studies, and Cultural Studies. For 42 weeks over 3 years, the period allocation will be as shown on the left below and may be compared with the period allocation for Swaneng Hill School, as shown on the right:

New Model		Swaneng Hill School
882	English	975
882	Mathematics	936
882	Science	819
378	Setswana	368
882	Development and Social Studies	456 (Development Studies) 456 History
756	Cultural Studies	456 (Geography)

There is clearly very little time in the programme for voluntary work in the community and for the domestic chores of the school. It may be necessary to employ cooks and cleaners, but I think that the students should be required to do as much of this work as possible. There would be 200 of them and the duties can be spread amongst them, so that each does only a little from time to time. If work in the community is important in a conventional school for improving student attitudes, it is less important in a school such as this, where so many other measures are being applied to prevent attitudes of superiority taking root.

The activities of the different technical sections will include the following:

Engineering, metalwork and vehicle maintenance. Manufacture of steel furniture and steel products, vehicle and engine maintenance and repair, tool- and die-making.

Agriculture and food-processing. Dairy production, beekeeping, pigs, poultry, sheep, goats, rabbits, gardens, irrigated arable production, beef, plant-nursery work and forestry, landscaping, meat-processing, confectionery, preserves, oil-processing, beverages.

Building and construction. All types of building, including stonemasonry, concreting and plumbing.

Woodwork. All types of wood products, furniture, upholstery and cabinet-making.

Photography, printing and publishing. Photography, developing, printing and enlarging. All types of printing, production of stationery, bookbinding, publishing, books and periodicals.

Tanning and leatherwork. All types of leather and leather goods, skins and hides.

Marketing, commerce, trading and office practice. Responsibility for marketing of all products, maintenance of all records, accounts, correspondence and office routines and provision of secretarial services for whole project as well as for engagement outside.

Industrial manufacture. Manufacture of soap, glues, polishes, plastic goods and building materials.

Electronics and electrical work. Repair of electrical appliances, electric wiring, installation of generators, manufacture of radios and electrical appliances.

Arts, crafts, technical drawing and design. Plans for buildings, design of products, silk screen, posters and campaign materials, design and artwork for publications, etc.

Table 9. *Distribution of students and staff between forms and skills*
S=Students; T=Teachers

Year	Form	Classes	Pupils	Academic teachers	Engineering and metalwork Vehicle maintenance S	T	Agriculture and food-processing S	T	Building and construction S	T	Woodwork S	T
I	I	1	28		4		8		6		4	
	II	1	28		4		8		6		4	
Total		2	56	3	8	1	16	1	12	1	8	1
2	I	2	46		4		8		6		4	
	II	1	28		4		8		6		4	
	III	1	28		4		8		6		4	
Total		4	102	5	12	1	24	2	18	1	12	1
3	I	2	46		4		8		6		4	
	II	2	46		4		8		6		4	
	III	1	28		4		8		6		4	
	IV	1	24		3		7		5		3	
Total		6	144	8	15	1	31	2	23	2	15	1
4	I	2	46		4		8		6		4	
	II	2	46		4		8		6		4	
	III	2	46		4		8		6		4	
	IV	1	23		3		7		5		3	
	V	1	24		3		7		5		3	
Total		8	185	10	18	2	38	3	28	2	18	1
5	I	2	46		4		8		6		4	
	II	2	46		4		8		6		4	
	III	2	46		4		8		6		4	
	IV	2	37		3		7		5		3	
	V	1	23		3		7		5		3	
Total		9	198	11	18	2	38	3	28	2	18	1
	I	2	46		4		8		6		4	
	II	2	46		4		8		6		4	
	III	2	46		4		8		6		4	
	IV	2	35		3		6		5		3	
	V	2	35		3		6		5		3	
Total		10	208	12	18	2	36	3	28	2	18	1

The school would be small, probably consisting of eight classes with a total of 208 students. The growth of the school and the spread of students and classes over forms and skills are shown in Table 9. The teaching staff, both for technical training and academic subjects, is shown in

Photography, printing, journalism		Tanning and leatherwork		Marketing, commerce, trading Office practice		Industrial manufacture		Electronics and electrical		Arts, crafts, technical drawing and design	
S	T	S	T	S	T	S	T	S	T	S	T
2				4							
2				4							
4	1			8	1						
2		4		4		6		4		4	
2				4							
2				4							
6	1	4	1	12	1	6	1	4	1	4	1
2		4		4		6		4		4	
2		4		4		6		4		4	
2				4							
2				4							
8	1	8	1	16	1	12	1	8	1	8	1
2		4		4		6		4		4	
2		4		4		6		4		4	
2		4		4		6		4		4	
2				3							
2				4							
10	1	12	1	19	1	18	2	12	1	12	1
2		4		4		6		4		4	
2		4		4		6		4		4	
2		4		4		6		4		4	
1		3		4		5		3		3	
2				3							
9	1	15	1	19	1	23	2	15	1	15	1
2		4		4		6		4		4	
2		4		4		6		4		4	
2		4		4		6		4		4	
1		3		3		5		3		3	
1		3		3		5		3		3	
8	1	18	1	18	1	28	2	18	1	18	1

Table 10. Estimates of revenue and expenditure are provided in Table 11, and estimates of capital requirements in Table 12. The phasing of capital expenditure is set out in Table 13.

In preparing the financial estimates, I have relied on experience in the

Table 10. *Staffing*

Year	Enrolment	Staff
1		3 Academic
		6 Technical
	56	9
2		5 Academic
		11 Technical
	102	16
3		8 Academic
		12 Technical
	144	20
4		10 Academic
		15 Technical
	185	25
5		11 Academic
		15 Technical
	198	26
6		12 Academic
		15 Technical
	208	27

Brigades. The income and direct production costs, *not including wages*, of the Serowe Brigades, taken from the accounts shown in Appendix 2, are as follows:

	Income	Production costs
Builders' and Carpenters' Brigades	34 195	14 362
Farmers' Brigade	29 124	13 442
Textile Workshop	9 881	5 575
Serowe Engineering	81 075	56 200
Tanners' Brigade	1 100	804
Serowe Electrical	15 186	9 516
Total	R170 561	99 899

With a greater degree of mechanisation in this institution, it should be possible to increase income above that of the Brigades other than Serowe Engineering.

Salaries, shown below, include the salaries of the 27 teaching staff and nine Batswana technicians as section leaders and supervisors, five of whom would be required for agriculture, two for engineering and one for printing. These people would be of the same calibre as section leaders in Brigades. Expatriates will be required for some time to come, but I believe, from experience, that it will be possible to find the kind of people who would accept salaries of the order shown here. (These salaries are net of rent.)

7	Married professionals, expatriate and local, at	R2 700=18 900
5	Married volunteer professionals at	R1 800= 9 000
15	Single volunteer professionals at	R1 080=16 200
8	Technicians (average) at	R 720= 5 760
	Total	49 860

The capital required would be of the order of R300 000. The necessary facilities would, of course, include the workshops, offices, lands, livestock and equipment required for the production side of the enterprise. A large beef ranch would be included. Though some specialist rooms might be valuable for the teaching of the academic subjects, in general the buildings would be designed for flexibility in the approach to the learning and teaching on this side. Provision would also have to be made for some staff accommodation and student accommodation, some of which will be scattered in the town near the institution.

Whenever services are provided by any department to another or to the institution as a whole, the cost of the service will be accounted for under the department's income, even if no actual cash payment is involved. The school would be built by the building department of the institution; the income shown for this department in the estimates in Table 11 would, of course, include revenue deriving from their work on the institution's construction. Services provided by the commercial section in doing all their accounts and marketing will be dealt with in the same way.

It is probably inevitable that there will be students in the school who, even when the programme has been fully explained to and accepted by them and their parents, will, after a while, try to get out of work and who will complain about conditions. In talking to parents, we shall have tried to make sure that they have really understood that the exclusive schools, with their expensive, subsidised privileges, can only be provided for a minority and that the only way in which all children can be educated is by the sort of programmes offered by the cost-covering school and Brigades.

Where students prove un-co-operative, close consultation with parents will be necessary. Conditions at the school will have been spelt out in detail to parents in a document which they will have been asked to sign beforehand. Parents will be invited to come to the school to help to deal with the unhelpful students. Parents will be well represented on the school's governing authority, which will try to forge strong links with the community. We shall involve members of this board with problems at the institution, as we are now doing with the Serowe Brigades Development Trust.

Table 11. *Estimates of revenue and expenditure*

A. Costs in rands.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Salaries	13 000	23 000	29 000	36 000	37 500	48 500
School supplies	1 000	2 000	3 000	4 000	5 000	5 000
Depreciation	2 500	5 000	6 000	7 500	10 000	15 000
Water, transport and electricity	1 000	1 500	2 000	2 500	3 000	3 000
Feeding	2 000	5 000	7 500	9 000	10 000	10 000
Administration	2 500	3 000	3 500	3 500	4 000	4 000
Maintenance	1 000	1 500	2 000	2 500	3 000	3 000
Other, including medical	1 000	1 500	1 500	2 000	2 500	2 500
Total, carried forward	24 000	42 500	54 500	67 000	75 000	91 000

B. Production costs in rands.

These figures for production costs cover the costs of materials and transport of materials, and certain direct costs for water, electricity, maintenance, business and administration. Salaries and depreciation are included with the figures for costs (section A), along with certain other costs for water, electricity, maintenance, business and administration.

Industrial	–	2 000	3 000	4 000	5 000	6 000
Engineering	5 000	7 500	9 000	10 000	10 000	10 000
Agriculture and food	3 000	5 000	8 000	9 000	10 000	10 000
Building and construction	4 000	7 000	8 000	10 000	11 000	11 000
Woodwork	3 000	3 500	4 000	5 000	5 000	5 000
Printing and publishing	1 000	1 500	1 500	2 000	2 000	2 000
Tannery		1 000	1 200	1 500	2 000	2 000
Commercial	1 000	1 500	1 500	2 000	2 000	2 000
Electrical		3 000	3 500	4 000	4 500	5 000
Design and art		1 000	1 500	2 000	2 000	2 500
Grand total	41 000	75 500	95 700	116 500	128 500	146 500

C. Income in rands.

Industrial	–	4 000	6 000	7 000	8 000	10 000
Fees and charges	3 000	6 000	10 000	12 000	15 000	15 000
Miscellaneous	1 000	1 000	1 000	1 000	1 000	1 000
Engineering	10 000	14 000	16 000	18 000	20 000	24 000
Agricultural and food	8 000	12 000	17 000	19 000	20 000	22 000
Building	10 000	16 000	18 000	20 000	25 000	26 000
Woodwork	6 000	7 000	8 000	10 000	10 000	10 000
Printing and publishing	2 000	3 000	4 000	5 000	5 000	5 000
Tanning		4 000	5 000	6 000	7 000	7 000
Commercial	3 000	4 000	5 000	5 000	6 000	7 000

Table 11, cont.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Electrical		7 000	9 000	10 000	12 000	14 000
Design and art		2 000	3 000	4 000	4 000	5 000
Total	43 000	80 000	102 000	117 000	133 000	146 000
Total costs	41 000	75 500	95 700	116 500	128 500	146 500

Swaneng has certainly suffered in its battles with some of its more elitist students, by having had a few members of staff who thought it proper to encourage the sense of grievance of some of these students. We shall try to avoid this problem at the new school by applying a much more rigorous selection procedure of our own. There are several people who have taught at Swaneng and Shashe in both Europe and North America, on whose judgment I would be able to rely in selecting candidates and who would be in a position to explain this programme fully to them. Incidentally, we have rarely experienced the same kind of disloyalty to the programme among expatriate staff working in Brigades.

For those who aim at further education and require specialisation in arts subjects, it should be possible to provide some specialisation in the fourth and fifth forms of the school. History or Geography might become options at that level in place of Cultural Studies.

As far as productive work is concerned, it is true that the time available is about 10 hours less per week than is available in Brigades. I have previously made the point about the need for greater mechanisation than there is in Brigades, to increase productivity to offset the time loss. The levels of productivity might also be higher than in Brigades because of the longer technical experience and presumably competence of the fourth- and fifth-year students. In the production, it is likely that, wherever feasible, the students at the different levels will be vertically integrated, so that the younger and less competent learn from the older and better students, as well as from their teachers.

The cost-covering school would have the following advantages over a Brigade, besides a greater degree of mechanisation:

(*a*) In every skill group, more than 50% of the students would be third-, fourth- and fifth-year trainees. They would be people who would have had a simultaneous secondary education, which should help to improve their skills, motivation and productivity;

(*b*) The instructors would be better qualified;

(*c*) The academic education itself would be production-oriented;

Table 12. *Estimates of capital requirements (in rands)*

Buildings and equipment for:	
Engineering, metalwork & vehicle maintenance	30 000
Agriculture & food-processing	80 000
Building & construction	5 000
Woodwork	10 000
Photography, printing, journalism, publishing	20 000
Tanning & leather	15 000
Marketing, commerce, trading	10 000
Industrial manufacture	20 000
Electronics and electrical work	10 000
Arts, crafts, technical drawing & design	15 000
Teaching	20 000
Staff accommodation	40 000
Student rondavels in nearby wards	12 000
Catering	6 000
Transport	7 000
	300 000

(*d*) A fairly substantial fee would be charged;

(*e*) The staff/student ratio would generally be better; the figures for students in Table 9 must always be halved, as one half would be in the classroom, while the other half was engaged in practical work;

(*f*) The working week would be longer.

If the students are to specialise right from the start (and this is necessary to promote greater output), we shall try to evolve aptitude tests and, in some cases, it may be necessary to switch students at a later (but *not* too much later) stage.

Is the programme too exacting? Our students will, of course, be older than the grammar-school students, and the programme will not involve solid concentration either on learning or on production. There will be, on the average, 3½ hours of each per day and perhaps the *change* from the one to the other should prevent the students from becoming too exhausted.

I took my only degree—Bachelor of Arts—by private study with the University of South Africa while working an 8-hour day in a government office, between the ages of 17 and 21. Thousands of people do it. Hundreds of thousands of apprentices in the developed world worked long hours during the day and studied at technical colleges at night, not so many years ago.

Although I feel strongly about the necessity to keep down costs in respect of the non-educational facilities provided, the estimates do, in fact,

Table 13. *Phasing of capital expenditure (in rands)*

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Engineering	10 000	5 000	5 000	10 000		30 000
Agriculture	30 000	20 000	10 000	10 000	10 000	80 000
Building	5 000					5 000
Woodwork	5 000	5 000				10 000
Photography	15 000	5 000				20 000
Tanning		5 000	5 000	5 000		15 000
Marketing	5 000	5 000				10 000
Industrial manufacture		5 000	5 000	5 000	5 000	20 000
Electrical work		5 000	5 000			10 000
Art & design		5 000	5 000	5 000		15 000
Teaching	5 000	5 000	5 000	5 000		20 000
Staff accommodation	12 000	12 000	6 000	5 000	5 000	40 000
Student accommodation	3 000	3 000	2 000	2 000	2 000	12 000
Catering	3 000	3 000				6 000
Transport	7 000					7 000
Total	100 000	83 000	48 000	47 000	22 000	300 000

allow for R50 per student for food. This is more generous than the allowance was at Swaneng. It recognises specifically that the students would be engaged in a strenuous programme and it would make possible the purchase of nutritious food, like milk, eggs meat and vegetables, from the agricultural department of the school, and at the same time it will solve one of its marketing problems.

It may be thought that instructors would become so greatly preoccupied with management problems that they could not instruct properly. For one thing, some of the management duties will be handled by the commercial department; they will handle finances and accounting, some ordering, checking of stocks, marketing, and various other business problems. In general, the level of production is not so high that management should be beyond the instructors. For example, Serowe Engineering is able to produce an added value of R25 000 in a year with 18 young people, a manager/instructor, one garage instructor, and two technicians. The staff/student ratio would be better in the proposed cost-covering school.

It may be that there would be a market limitation on the number of cost-covering schools that could come into being, in competition with each other for the sale of the same products, as well as with modern-sector Brigades, some rural Brigades, and the people trained by them all. The problem will, I think, be felt most acutely by those engaged in engineering, printing, electrical work and design, though even here there

may be more scope than is realised. In respect of rural Brigades and Boitekos, what was said about rural development in Chapters 2 and 3 holds good. Their future lies mainly (but not only) in the expansion of rural markets by increasing and diversifying production. The cost-covering school and its graduates ought to be able to compete in markets which are not easily open to rural Brigades and Boitekos, because of their limited mechanisation. For example, Botswana's trade statistics show imports of more than R1 000 000 in each of the following categories: processed foods, soft drinks and beer, clothing and textiles, building materials and fabrications. In addition, there are markets for household goods, chemicals, bicycles, printed materials, cheap short-wave radios, leather goods, timber and poles, chemicals, and a wide variety of services. Rural Brigades and Boitekos can produce some of the commodities in this range of goods, using their inexpensive methods and equipment. But it is the cost-covering school and its graduates who will have a better chance of competing in the markets for these commodities. Many of the products in this range are fairly sophisticated and need a degree of mechanisation which is beyond rural Brigades and Boitekos but which the cost-covering school and its employment offshoots could afford. There are some export possibilities open to all the various enterprises.

The cost-covering school is ideal for serving the purpose of the dual strategy of development. It can gear its training and production to meet the needs of both elements in the strategy. Its engineering faculty can produce equipment for rural development and tool up to meet some of the needs of the modern sector. Botswana's modern sector is booming for the moment; the Government's task will be to ensure that its benefits are spread fairly widely amongst Batswana. The cost-covering school will not only train some of the Batswana who can work in modern industry; it can in the meantime also produce for it commodities and services in engineering, printing, design and electrical work. It will provide some trained men free of charge to the modern sector; the least the modern sector can do in return is to use its goods and services. So far the mining magnates have preferred to give aid to projects like the elite Maru-a-pula school, rather than to trade with Brigades.

If we are bold enough to accept the revolutionary concept of a factory school, there is no reason why we should not diversify into production of such products as cement. In a sense, this would be a factory school, but why not? A factory whose workers are students and a school whose students are the factory workers. Before long, a coal mine will be in

production 18 miles from Serowe. We can extract all sorts of by-products from coal, even on a small scale, and a few initial experiments are being tried by one of Swaneng Hill's science teachers. We could produce castor oil for export, and certain essential oils.

A word on teaching methods. We shall be open to new ideas and methods to improve learning and assimilation by our students in respect of both the academic subjects and the practical activities. We shall aim to combine theory teaching as much as possible with the practical activity. Students will have notebooks for recording answers to questions which they should be encouraged to ask on the job. When they are given instructions, these should be fully explained and notes taken. Charts and visual aids should be available in and around all workplaces.

One of the ways in which the success of the cost-covering school will be judged will be by its ability to secure good examination results. We may expect some of the students to seek employment other than that which we were offering. We may also expect that some will want further education. We may therefore have to follow examination syllabuses fairly closely in some subjects, and this may curtail our freedom to experiment in curriculum reform. The subjects which we propose to teach at this school are all ones in which examinations are offered by the examining authorities concerned with Botswana: English Language and Literature, Science, Mathematics, Setswana and Development Studies. Some of our students may wish to offer the technical subject in which they specialised and some may be able to take the examination in either History or Geography, because we would have covered much of the content of both in Development and Social Studies and in Cultural Studies. Our experimentation would have to recognise this constraint, and we would press for alternative syllabuses to meet the needs of institutions like the one under discussion.

Employment of the students

Setting up production co-operatives for the graduates of the cost-covering school will be costlier than the establishment of the more labour-intensive, Boiteko-type, village programmes. I have very little actual experience to guide me, but I am not entirely without experience in this area. We have been brought into contact with the problems of modernised industry in Serowe Engineering, Serowe Electrical, the Mmegi wa Dikgang Printers and Publishers, certain aspects of Builders' Brigade work, and the dairy at the Farmers' Brigade. In addition, various experiments in production which we have undertaken enable me to draw some tenta-

tive conclusions. While the estimates of capital costs and earnings shown in Table 14 are rough, I do not think that they are totally unrealistic. I do not believe that it is possible to reduce investments below the figures provided without seriously reducing the income of participants and so threatening the success of the project.

In attempting to design a model employment co-operative for graduates of this school, I assume that about 45% of them may find employment as Brigade instructors, co-ordinators, managers, teachers or other staff or in the civil service or the private sector or may continue their education. Employment would thus have to be created for some 112. I have in mind two, diversified, production co-operatives to cater for this number, and the model costed in Table 14 would absorb 56 of these.

I do not assume that each one of the production activities can be repeated indefinitely, either in more cost-covering schools or in the employment models set up to absorb their students after training. Some different activities will have to be introduced and taught, and practised in the new employment structures, as they all expand. The model in Table 14, based on one particular mix of productive activities, is meant only to provide one example of various possible different mixes.

The total capital requirements for the employment model are R85 000, an investment per person of R1 527. This may yield annual earnings, to each of the 56 members, of R480.

When the students had completed their training, they would be reasonably well skilled, and these skills could be harnessed in the capital formation. The builders, carpenters and metalworkers could erect their own buildings and produce some of their equipment, whilst the farmers and food technicians could, after a few months, start feeding them. If, in the first year or two, everyone was willing to forgo some of his income and participate in labour investments and if each was required to invest R100 of his own, they might, in these various ways, be able to contribute some R600 each or a total of R33 600 to the costs of the programme. This would still leave some R51 900 or R927 per head to be found. In considering this large figure, we should bear in mind that the recurrent costs of the school would not have been subsidised. The Botswana Government reckons the cost of secondary education to be an average R250 per student per year, of which the student pays an average R75 in fees. Over a 5-year course in secondary education, the Government would have saved some R175 per year, totalling R875. One is tempted to think that, if cost-covering worked and an expansion of such a programme became possible, then subsidies saved on recurrent

Table 14. *Capital costs of establishing a model production co-operative for 56 graduates of the cost-covering school, with projected earnings of members (in rands per annum)*

	Capital	Number employed	Surplus net of production costs
Buildings	20 000		
Water and electricity	9 500		
Equipment, stock and working capital for :-			
Industrial and general	7 500	8	3 500
Engineering	7 500	5	3 500
Agriculture and food-processing	14 000	12	4 000
Building and construction	4 000	8	4 000
Woodwork	5 000	5	2 000
Printing and publishing	7 500	2	700
Tannery	5 000	5	2 800
Commercial	2 000	5	3 000
Electrical work	2 000	4	2 000
Design and art	1 500	2	1 500
Total	85 500	56	27 000

Capital investment per person: R1527. Average earnings: R482.

costs might be made available to set students up in employment. This might be a better use of the funds, but the fact that funds of that order are required might detract from the replicability of the model. The schools themselves require capital investments in each of some R300 000 or R1 500 per student. (This is, in fact, not very much higher than the cost to the Botswana Government of establishing a secondary-school place.) It is not impossible that cost-covering schools might succeed in covering their costs without needing the income from fees. That income—R75 per year for five years, totalling R375—would then become available for investment in employment creation, leaving R552 to be found. It is clear, however, that for the first models something like R900 per person would be needed to establish the students of cost-covering schools in employment that would provide them with acceptable levels of earnings. Continuing participation in capital formation should lead to a steady increase of earnings and I believe that it would be realistic to envisage repayment of soft loans and interest over 19 years, at an average rate of R65 per person, or R3 640 from one model co-operative, per year, starting at R20 in the first year and rising by R5 to R110 in the 19th year.

The total capital required to set up 10 cost-covering schools, educating and training 2 080 people by the end of 5 years, would be R3 000 000, but as the investment would be phased over 5 years, allowance must be made for increases in costs. The annual investments would thus be R1 000 000 in the first, R870 000 in the second, R520 000 in the third, R540 000 in the fourth and R360 000 in the fifth. The final total would therefore be R3 290 000.

Table 15 shows the total cost of setting up 10 cost-covering schools and 40 employment co-operatives ("Big Boitekos") to cater for 55% of their graduates over 15 years. Each year, after the fifth year, four such co-operatives would be set up to cater for, say, 224 of those leaving the 10 cost-covering schools in the programme. By the sixteenth year, the cost of setting up the "Big Boitekos" might have escalated to R345 000 but loan repayments, as Table 15 shows, would by then finance the investments needed in that year and in each subsequent year.

A programme involving 10 cost-covering schools would require 270 academic teachers and technical instructors, covering quite a wide range of skills. As with Brigade expansion, so in the expansion of this programme staffing would be a major problem. Reliance can be placed on volunteers, to a certain extent and in the short term. Teachers at this level cannot be trained as quickly as Brigade instructors. The problem might, to some extent, be alleviated relatively quickly by establishing sixth and seventh forms in two or three of the 10 cost-covering schools, specifically to train staff to meet the needs of the system. Each sixth- and seventh-form stream could train about 24 such staff each year. In the sixth year after starting three streams, some 288 staff would become available, and 72 each year thereafter. The additional capital involved would probably be about R2 000 per head. Soon afterwards, some of the graduates of the cost-covering school who had gone on to university might complete their education and become available as teachers in the system.

The alternative model

I do not intend to repeat the exercise of projecting costs and earnings for the alternative approach to the problem of education and employment, namely, starting with the production co-operatives and setting up an academic centre to serve them. I shall confine myself to noting some of the advantages and disadvantages of each in relation to each other and in respect of other factors.

Table 15. *Outflow of investment in 10 cost-covering schools and employment structures to serve them, with inflow of loan repayments, over 15 years (in rands)*

	Outflow				Inflow		
Year	School	Employment	Totals	Number in employment	Number repaying loans	Annual repayments	Running total
First	1 000 000						
Second	870 000						
Third	520 000						
Fourth	540 000						
Fifth	360 000		3 290 000				
Sixth		210 000		224			
Seventh		217 000		448			
Eighth		225 000		672	224	4 480	
Ninth		235 000		896	448	14 560	19 040
Tenth		247 000	1 134 000	1 120	672	31 360	50 400
Eleventh		260 000		1 344	896	56 000	106 400
Twelfth		274 000		1 568	1 120	89 600	196 000
Thirteenth		290 000		1 792	1 344	133 280	329 280
Fourteenth		307 000		2 016	1 568	188 160	517 440
Fifteenth		325 000	1 456 000	2 240	1 792	255 360	772 800
Totals			5 880 000				772 800
Sixteenth year		345 000		2 464	2 016	336 000	

The great advantage of making an immediate start on a project reflecting the second approach is that it would bring us to grips at an early stage with the problems involved in employment creation. We learnt a great deal about *in situ* and institutional training in Brigades from the Serowe Boiteko model. The great disadvantage is that the workers in the co-operatives start almost completely without skills. An expert will be required to be in charge of each productive activity—probably an expatriate. It will take quite a long time to build up the earnings of the participants, especially if the experts' salaries are to be met from production, as well as the costs of maintaining the academic centre. Subsidies might be necessary for two or three years and would be justified on the grounds that experimentation is necessary to identify the problems and devise solutions for them.

The employment co-operatives that we set up for graduates of the cost-covering school should be less dependent on expatriates and more capable of managing themselves. Their members would have had a good technical training and a fairly sound, all-round education. They will have commer-

cial and management specialists who will have been closely involved in actual management and business problems over 5 years. It might be useful to have two or three roving experts as consultants, advisers and auditors—they might be government officers—but no more than this should be needed.

The costs of the two approaches should not vary greatly. The cost advantages of one are likely to be offset by its disadvantages. Both will need to house expatriate (and may be even local) staff and instructors. Both will have to set up academic centres. There might be some savings in the costs of feeding and accommodation in the second approach; there would be savings also in the second approach, because we should only have to set up the factories of the production co-operative itself and not have to duplicate these within the school, as in the first approach. But these savings may be largely offset by the subsidies required to pay for the second approach in the co-operatives' early years. It would take such producer co-operatives a long time before they could begin earning enough to repay loans and participate in capital formation.

Curriculum reform and Development Studies

Students' responses to what they have learnt may be expressed in their behaviour in different ways. They might learn the lesson parrot-fashion, without fully absorbing it. They may cognise it at different levels, even to the point of total assimilation, so that it affects their thinking and their outlook, but it may not necessarily determine their actions. The reason may often be that material considerations or passions and not an intellectual outlook determine individual behaviour. Some people may respond in a third way, so that their intellectual outlook takes precedence over material considerations in deciding their behaviour. Single individuals may be capable of both the second and third responses on different issues or at different moments even on one issue.

Many of the students at Swaneng Hill School did, I think, respond in the second way. It was important to think of creating prospects of material conditions for students after education which would satisfy *reasonable* aspirations without turning an intellectual outlook into mere rhetorical posturing. The cost-covering school and the "Big Boitekos" intended to follow it up were planned with this in mind.

Whatever other factors there are in teaching and learning which may help to shape attitudes, I am quite sure that inputs of knowledge are essential to the second response. I have suggested that reform of the

curriculum is necessary on several grounds. It is necessary to improve the efficiency of the input, basically on grounds of economy. Is all the material now included in time- and money-consuming, conventional curricula really necessary to learning processes directed at the second response? Change is also necessary for social and cultural reasons.

Cultural Studies

Most of those who determine educational policies and curricula are themselves the products of western education and there are very few protagonists of a thorough-going revolution. The danger, as I see it, of an *exclusive concentration on exotic cultural treasures* is that a cultural alienation results which is reinforced by the social and economic divisions within the community. An elite is not objectionable on the ground that it appreciates Beethoven, Cezanne or Milton, but only if it is thereby culturally alienated from the wider community and more especially if it enjoys an economic privilege which constitutes actual or potential economic exploitation. Frantz Fanon writes that "culture . . . in its essence . . . is opposed to custom, for custom is always the deterioration of culture . . . The native intellectual . . . must realise that the truths of a nation are in the first place the realities of the life that is being *lived by its people now*".

In the way we now teach History and English Literature, and in the content of what we teach in such subjects, there is a danger of cultural indoctrination, which contributes to the process of alienating people from their communities. It is right to encourage initiative but not excessive individualism; individualism may be a product of current cultural indoctrination and institutionalised education, and this may conflict with the *mores* of the community. Of course, traditions are changing in the communities in the developing nations, and in some places the previously esteemed values, like communal obligations, may now be less esteemed by many. But the student, who may have to be a reformer and an innovator, should never fail to have an understanding of what constitutes the predominant cultural values of his community. He should also have some insight into new and old patterns of thought and the dichotomy between them. Essentially the student should be *in sympathy* with his community.

I must acknowledge that the process of alienating young people from their communities takes place in ways, and for reasons other than those I have suggested above. Here the socio-politico-economic set-up must be recognised as an important factor and I have already noted it. I am

dealing here only with those factors influencing student attitudes which we can influence, namely, institutionalised education, the way we teach and what we teach.

As I see it, Cultural Studies must present a spectrum of man's cultural diversity now and through history. In Development Studies, we present a spectrum of man's economic development and we are able to show that all men began as hunters and gatherers and progressed through the first agricultural revolution. We show also the early innovations in technology. For some peoples, this was followed by an industrial revolution and went on to high mass consumption. Imperialism interrupted and disrupted the continuum in some places. Contact between peoples, imitation and adaptation, have always had a place in economic development, as they have in cultural change. I am not suggesting that in man's cultural diversity—contemporary and historic—we can find a completely comparable kind of trend that can as easily be regarded as development or progress. But I do think that it is possible for some people to see certain cultural forms of expression as superior to others. Thus, a Beethoven or Brahms symphony or concerto may seem culturally more advanced than something less complex in form. Superficially, the very complexity of the Brahms may lend itself to this false assumption. To some extent, the *form* of the cultural expression, as opposed to its *sensibility*, depends on the level of technology and state of development, besides other factors. A society cannot produce a symphony or an oil painting if the instruments necessary and the oil paint have not been invented.

It is unfortunate, but understandable, that some Africans or Asians react unfavourably to Brahms or Cezanne or Milton *because* they have been presented as culturally superior. In order to create a situation in which the cultural achievements of other societies can be accepted, understood and truly appreciated, we should be able to place them in a *spectrum* of human achievement in which the attainments of each society and its cultural forms are recognised, seen in their perspective and related to such factors as level of technology, state of economic development, intensity of religious belief, geographical factors, availability of resources, the existence of an alphabet, and so on. We should emphasize the differences between the *forms*, the *intensity* and the *sensibility* of artistic expression.

Young people should be taught about the achievements of other peoples and societies, now and in the past, as well as about their own society's achievements, in a way that will give them a pride in what is their own, an interest and appreciation of the achievements of others, a

recognition and understanding of the factors that account for differences, and a perception of what it is possible for them to achieve. This kind of sympathetic treatment of their own achievements within the broad human spectrum should give them a sense of their own potential, new awareness and the knowledge that they can gain control over their environment. Thus, learning about the achievements of others will provide growth points for their own culture. It will not simply displace it, as present teaching in this area does.

A very important advantage of Development Studies over conventional curricular alternatives in separate disciplines is precisely that it covers a range of disciplines and enables them to be integrated. The history of man, his artistic expression, his religion, ethics and philosophy can all be related to each other, and to the various factors that have influenced them and their mutual inter-relationship, in a single subject. The development of such an integrating, single syllabus, with some of the objectives described here, is one of the tasks I have set myself for the immediate future. Cultural Studies might integrate certain aspects of Literature—English, Setswana and other—and of History and Geography. Other aspects of History and Geography might be integrated into Development and Social Studies.

Before proceeding to discuss Development Studies, I should note here that I am not really competent to make any worth-while comments on the subjects of Science and Mathematics. I would confine myself only to re-iterating that Science should as much as possible be related to production and experimentation in the productive use of local resources.

Development Studies

I intend to deal first with the content of the subject and the justification for including it in the secondary-school syllabus, both of conventional schools and of the cost-covering models I have proposed. I shall thereafter look briefly at methods of teaching it and try to answer criticisms that it is too difficult to teach in a secondary school.

The outline of the syllabus itself is contained in Appendix 3; this is the syllabus approved by the Schools Examination Council of the University of Botswana, Lesotho and Swaziland for the Junior Certificate examination taken after 3 years of secondary education.

The arrangement of material in the discussion which follows is different from that of the syllabus. It highlights certain aspects and features of the course and serves better the arguing of the case for its inclusion as a school subject. The course was drafted by Robert Oakeshott, with

amendments here and there from other people, including myself. The discussion in these pages represents a considerable blending of his and my thinking at the time we completed the drafting. Almost all of what follows is extracted from previous papers, though I stand by a great deal of it; much of it is in Robert Oakeshott's wording.

One of the major pre-occupations of responsible people in the developing countries is bound to be, probably for the next two or more generations, economic development. The governments of developing countries will be judged perhaps more than anything else by the relative speed and painlessness with which economic progress is achieved. But they should also be concerned with its goals and direction. The character of the development process, its enlightenment, humanity and concern with human values—or otherwise—will inevitably make some mark upon the character of the modern society which ultimately emerges.

The Development Studies course aims at giving students in secondary schools an awareness of the processes of development and of the enormous political, social, moral and cultural problems associated with it. The course includes within its scope some assessment of the problems of the student's own country. It points out the diversity of economic activities necessary to balanced development and the great importance of organisation and leadership. By focussing constructively on hunger and poverty, ignorance and drudgery, unemployment, disease and other suffering (which are widespread in most developing countries), it tries to imbue students with concern for the less privileged, in the hope that this may motivate them to improve the human condition. If they are motivated in this way, it is our hope that they may take care also to ensure that the transformation, as well as its goals and direction, is as humane, enlightened, and painless as possible. The course contrasts some of the essential characteristics of an underdeveloped economy with those of a highly developed modern economy. It is no accident that the main characteristic features of the one are the opposite of the chief characteristics of the other. The lists of contrasted characteristics are not comprehensive, but they are representative of essentials. In postulating characteristics of stages of growth, there is an underlying assumption that some experiences are universal. It is also assumed that all societies are evolving. The points tabulated under (1) relate to a primitive economy. Those under (2) relate to a highly developed economy.

1. *A pre-transformation economy*

(*a*) The following are the essential characteristics of an underdeveloped economy:

(i) The production of food is the dominant economic activity of the great majority of people, and necessarily so, because of the techniques used, the prevalent attitudes and customs, and the power supplies available.

(ii) The corollary of (i)—the absence or near-absence of specialization.

(iii) The very limited surplus, after annual consumption requirements have been met, of yearly production, and the normal allocation of these surpluses—such as they are—not to productive investment but to providing a privileged consumption for a small class.

(iv) The very limited level of outside contact and of trade with other communities. The tendency towards self-sufficiency, both within really small units and within the pre-transformation economy as a whole.

(v) The absence of anything much besides animal power to supplement men's physical efforts (though one should take note of various technological methods used since the time of the ancient Egyptians).

(vi) The relatively low expectation of life.

(vii) The grouping of population in small rural centres—villages or hamlets—rather than towns.

(viii) The normal acceptance of the established order in most pre-transformation societies and their feudal basis.

(ix) The prevalence of extended families and of other privately organised (or co-operative) social-welfare arrangements.

(x) The physical drudgery and low level of material comfort in pre-transformation societies.

(xi) The unscientific and unquestioning attitudes typical in pre-transformation societies; the tendency to identify truth with authority or to have no conception of truth independent of the idea of authority.

(xii) The high level of artistic development achieved in many pre-transformation societies.

(*b*) Young people in developing countries are being asked, in their schooling, to imbibe a vast and alien culture; they may find that they have to reject much in their own tradition and culture which inhibits economic development or which is in conflict with a rational belief in scientific causation. The Development Studies course will face them directly with the fact. It would be well to stress that economic development is not necessarily synonymous with civilisation and culture.

Africans may justifiably wish to preserve some of their heritage, just as some westerners are concerned about some of the values of the "world" they "have lost". The course should help students to distinguish between, on the one hand, custom and behaviour patterns rooted in the past that were related to social, political and economic organisation and, on the other hand, those involving moral and human values. These sections of the syllabus assume that there are certain important features common to nearly all societies at some stage in the history of each, and that such features, when found together, are broadly characteristic of a definable stage of economic growth and social organisation. But such features do not necessarily constitute immutable moral or even economic imperatives.

The students should be invited to note from their experience those customs which do involve value judgements and which have been affected by the break-up of tribal structures under the impact of economic changes, often with disastrous consequences. Students should be encouraged to search for ethical and moral standards that may be worth preserving or which will be relevant to new situations. They might also note, from their own experience, that constructive voluntary work and service is quite an important practical measure in promoting a healthy moral outlook. Specifically from the point of view of economic development, the course should:

(i) Analyse the manner in which some customs and traditions designed for another way of life become irrelevant to new conditions and what the consequences of preserving existing values may be in economic terms.

(ii) Select certain customs and discuss their pros and cons in the light of the need for development.

(*c*) It would be valuable to demonstrate briefly and summarily that quite a high degree of civilization and achievement had been reached in such diverse places as South America, Asia, Egypt, Ghana, Mali, Congo and, apparently, Zimbabwe. The attainment included a degree of technological know-how, but the main point to make is that there was not a sufficiently sustained and broad cumulative advance in the technological and scientific field to achieve effective economic transformation in modern terms (see (*a*), (i) and (v)).

2. *Modern developed societies*

(*a*) The characteristics of a transformed society can be seen very largely as the obverse of those identified in a pre-transformation one. They could be considered under the following headings:

(i) A relatively small proportion of people (except in a few specialist food-exporting countries) engaged in the production of food.

(ii) A high degree of specialization in employment.

(iii) A relatively large surplus, after annual consumption requirements have been met, of yearly production, and the normal allocation of these surpluses to productive investment.

(iv) The high level of outside contact and trade.

(v) The high expectation of life.

(vi) The concentration of people in towns.

(vii) The disappearance of extended families and their replacement by nuclear families. The provision of Social services by largely non-private agencies.

(viii) The relative material well-being of transformed societies, but their tendency to deprive people of many of the personal satisfactions characteristically available in pre-transformation societies and perhaps their consequent tendency towards neurosis.

(ix) The extensive availability of mechanical power.

(x) The prevalence of scientific and critical attitudes; the large-scale allocation of resources to the education of each succeeding generation.

(xi) The impact on political institutions and policy of a substantial, politically aware, critical and informed public opinion; and the significant political challenge to privilege.

(*b*) In relation to 2 (*a*), (ix) and (x), it would be valuable to reduce the meaning of development to its simplest terms. It means the way in which man uses, alters and controls his environment and the resources in it, and the way in which he analyses and emulates nature, sometimes to better effect than nature itself but very often in an environmentally destructive way. Progress in economic terms refers to man's taking of natural resources and his processing of them, using his labour, skill and technical and scientific knowledge, into objects that satisfy his wants.

The main justification for the selection of the material and its form of presentation under (1) and (2) are that by these means the following can be demonstrated:

There is a certain universality of experience; if students are able to identify the characteristics of a primitive economy as extant in their own society, they can view them in universal perspective. They need feel no inferiority about them and there may be great value in some of them. There is nothing eternal or immutable about them, though some may be worth preserving, and change has not been exclusively effected by any

single ideology. (It should be stressed that universality of experience does not imply uniformity of human character or behaviour.)

The goal of a mass high-consumption economy is not without its horrors and, given the finite resources of the earth, may not be attainable everywhere; the movement towards it can be immensely disruptive of society and it demands vast changes of attitude. The aspirations of the people of emergent countries, implied by the explosion of expectations, are driving them along the road of development. They should know precisely what the process of change may entail. Western and Russian experience is not superior, but it is experience that has already been undergone. Lessons can be drawn from it and these lessons applied to the actual process of development itself—the transformation process. By presenting to students a full and frank picture of a modern developed society, students are given cause to think carefully and selectively about the development process itself and its goals and, indeed, they are presented with a variety of avenues in that part of the syllabus to facilitate their selection and the formulation of their own goals. They are free to integrate traditional values with new insights, if they choose to, where these seem to be possible and can be reconciled with development. These statements include, of course, vast generalisations and assumptions.

The transformation (or transition) process

(*a*) This is concerned with a description of what has characterised transformation processes and begins with a summary discussion of growth theory and the production factors, with special mention of the following subjects:

Land and natural resources.

Enterprise and organisation.

Labour.

Knowledge (science and technology) and skill.

Capital formation (representing the accumulated assets resulting from the combination of other factors of production for profitable (or useful) purposes).

(*b*) There will be a broad comparative study of historical transformation in the United Kingdom, the United States, the USSR, Japan, Sweden and Denmark. The study will attempt to show how transformation was achieved in these countries and will include discussion of the following subjects:

Agriculture under the impact of science, changes in land tenure, incentives and specialisation.

Power (machines), communications and transport, and the cumulative development of science and technology.

Private enterprise, state enterprise, co-operatives, and the role of the organiser (or entrepreneur) in each; the relatively high rewards (in terms of cash, power or prestige) which have normally been accorded to the "transformation managers" (be they capitalists or commissars or co-operators).

The increase in production, leading to the build-up of larger surpluses (after meeting the claims of consumption) and the allocation of these surpluses to productive investment.

The maintenance, throughout the transformation period, of very high investment levels and the consequent imperative of holding down consumption while the process is worked through.

(*c*) Many of the transformation processes have been long and unpleasant and many of the people who have lived during the period of transformation have often been exploited by private entrepreneurs (child labour and slavery being the worst forms of it) or by the state (in forced labour). We might consider the sociological and political impact of these historical transformations under such headings as the following (the list is not all-inclusive):

(i) The rejection of traditional practices and an assertion of the primacy of the scientific attitude (see 1 (*b*)).

(ii) The problem of holding down mass consumption and specifically holding down the real wage rates of the labour force.

(iii) The difficulty of finding an acceptable balance between social service and social-welfare expenditure and productive investments.

(*d*) The growth and evolution of political institutions. The course would logically progress from the discussion of historical transformations to contemporary ones, where the transformation is either being embarked upon or partially completed today. There will be a comparative study of contemporary transformations in India, Zambia, Ghana, Tanzania, China, Cuba and Mexico.

The special features applying to all developing countries and which are likely to affect contemporary transformation processes might be looked at under headings such as:

(i) The population explosion and the relatively declining rate of food production.

(ii) An almost universal build-up of expectations (associated with

an almost total awareness, throughout the poorer world, of the standards of material comfort enjoyed in the developed countries).

(iii) The accelerated development in the last few generations of scientific and technical knowledge. For the most part, this may be a beneficial factor, but the existence of highly sophisticated, capital-intensive techniques may inhibit the short-term adoption of more appropriate labour-intensive techniques which can do the job and will accelerate the development process, if adopted, and provide employment.

(iv) The drift to the towns. This is a universal phenomenon which has brought about great hardship all over the world and throughout history. Rural-development schemes may help to reduce the flow to the towns.

The common features being encountered in their transformation processes by post-colonial countries in Africa south of the Sahara might be discussed in terms of:

(i) The continuing influence of customs and attitudes dating back to pre-colonial days; some of these may be helpful to economic progress, some may not (see 1 (*b*)). It may be possible to integrate some of the emotional, moral and social commitments of young Africans with new economic and administrative insights and even to revise economic goals on this basis.

(ii) The continuing influence of the colonial period and its impact, with special reference to the preference for white-collar jobs and the salaries of local civil servants in relation to the living standards of most of the population.

(iii) The prevalent temptation to make prestige expenditures.

(iv) The relatively fragile character of political authority, given that, in a large number of countries, it has been built up in opposition to the traditional rulers, and given tribal and religious heterogeneity.

In the comparative study, attention will be given to such development policies as co-operatives, national youth services (Builders' Brigades), part-work, part-study schools, voluntary labour and community development, with special emphasis on non-profit-making social services, such as schools and projects needing labour-intensive methods, cottage industries, proper allocation of resources and sound planning, including inexpensive methods, adult literacy and different methods of spreading it, and foreign aid and the best use of it.

Considerable attention should be paid to the quality of education and also to the need to promote integrity in public life.

The students' own country (Botswana)

Here we should discuss the special problems facing Botswana, as, after the relative neglect of the colonial period, it attempts to accelerate its transformation. We would consider the special features of Botswana's economy and of Botswana society, considering sympathetically and critically how far Botswana has got along the road. We would also take a look at the country's transitional development plan. The following are some of the points that could be raised specifically:

(*a*) Education (numbers at school) and literacy levels;

(*b*) Government expenditure and revenue totals with sources;

(*c*) Local-government and other local-authority expenditure and revenue totals with sources;

(*d*) Industry and other economic activity—levels of employment and limited prospects of employment;

(*e*) Capital shortage and inadequate taxable sources of income;

(*f*) Traditional attitudes towards cattle and the economic effects:

(*g*) Customs and their economic effects on agriculture and productivity; over-grazing and erosion;

(*h*) Scientific medicine and the population explosion, especially related to low food production and limited education and employment prospects;

(*i*) Improving the cattle industry.

It would be useful to note all the problems common to contemporary transforming societies to identify them specifically in the study of Botswana, and also to note all the features which have characterised transformation processes elsewhere in the past and in the present, and to see if they can be of help to Botswana.

The local plan

This part of the course recognised several things:

(i) That the school may be a focal point of development—which is good for rural development. It provides an opportunity to stress the importance of service to the community and to show the most effective way of providing it;

(ii) The need to provide young school-leavers with an awareness of roles they can play as individuals in their own country's development;

(iii) It helps to provide them with the ability to work out local economic, social and moral problems and teaches the great importance of careful planning;

(iv) It should give them some practical experience as organisers—

in the belief that it is necessary to discover and encourage entrepreneurial and organising ability;

There will be detailed resource surveys in the area around the school:

On the basis of the resource data, a long-term development plan will be prepared for the area.

A savings-mobilisation project may be prepared and undertaken, if possible.

The students may be involved in the actual undertaking and management of a particular project, and they may be associated with existing projects initiated from the school. Not all schools can necessarily undertake this, but the experience of those which can would be available as a case study for others.

Transformation as a challenge

In Chapter 1, I spoke of the importance of imbuing students not only with confidence, knowledge and skill, but even more important, with a commitment to tackle, themselves, the economic social and human problems facing their country. At the earliest possible moment in their school careers, they must be made to feel involved in the problems of their country; and at the earliest possible moment they should be encouraged to find solutions which for them are practicable, such as voluntary work and community service. Very often solutions to problems may depend on the initiatives of the educated, and they must be given constant reminders of that responsibility. Their ability to take that responsibility effectively depends on knowing what they can actually do.

It would be valuable to discuss with the students disagreeably capitalist or disagreeably totalitarian features of the transformation process itself and the end product. The end products of existing developed societies should be critically examined. Environmentalists in the developed world are now questioning the conventional political assumptions that economic growth can continue indefinitely and that western material standards can go on improving. They also question the assumption that a world of 7 000 to 10 000 million people can enjoy the material living standards of the US, which is inherent in the political and economic planning thinking of, and for, the third world. Some people in parts of the third world see the proposals to check their population growth as some kind of politically inspired European plot. It is equally possible that the warnings of the environmentalists may be similarly misinterpreted as an attempt to hold back progress in the third world, while the developed world continues to pre-empt the world's material resources and maintain its own material

standards. These questions should be frankly discussed. Such a discussion might, for example, suggest that, if third-world policies were geared to social justice, to providing community facilities instead of consumer goods for the individual, buses instead of private cars, laundries instead of washing machines, their path to material progress would actually be faster. Modernised, consumer-oriented development actually arouses, in most people, aspirations which it cannot satisfy.

It is essential to ensure that in development planning the impact of economic development on the lives of ordinary people is borne in mind. If this consideration leads young people to question their own goals, they should be encouraged to present their own ideas.

It is possible to present the transformation as an exciting and challenging time for educated people and to make them accept, intellectually, the vital importance of their own personal responsibility and involvement, and to remind them of the importance, too, of making the transformation an enlightened, humane and painless one.

Comment on the course

I received from various friends valuable and helpful comment on the proposals for the syllabus, as presented in the preceding pages. One friend, whose advice I value greatly, wrote with concern that we "take for granted the assumption that the transformation process will overwhelm current social patterns . . . This is western economics deciding what is good for African society in almost exactly the same way as educationalists export the only model that they know. It is teaching the next generation of young Africans the techniques of western economic planners and encouraging them to use them humanely to destroy the society they have inherited." Several other friends and associates are concerned that we might be encouraging our students to tread a path which will lead them to the same obsessions, possessiveness, selfishness and neuroses of the developed countries.

Emerging countries have already, quite deliberately, set in motion development processes, modelled on the west, almost everywhere resulting in socially, politically and economically divided societies. It is possible that Africans may be able—and may want—to hew out a different path for themselves, but they must know what choosing that path entails. In so far as Africans are able to hew out a new path for themselves and choose to do so, it is for them to make such a choice. But will everyone in the society be able to make a free choice or will the choice made by a few prejudice the many? They can in any case best make whatever choice

may be possible, given all the facts, all the options, and all the experience of those who happen, by the chance of history, to have gone ahead.

The course should present a wide enough range of options, and it should also keep young Africans sufficiently in mind of their own heritage; it should help them to make socially just choices for their societies. The engineer and the architect should be aware of such problems as the effect on employment levels and import statistics of capital-intensive and labour-intensive techniques when planning roads and dams.

It is not only the potential organisers, administrators, and technical pace-setters of possible rural co-operatives who need to have a full grasp of the nature of the economy and the processes of economic development. All the educated should know the conflict between investment and consumption and the need to keep down wages and salaries. All should have given serious thought to the conflict between the demands of development and established custom. In most developing countries, primary teachers constitute quite a sizeable proportion of those who draw salaries: to secure their co-operation in implementing the economic plan would be of immense value, particularly because of the great numbers of children whom they could influence.

Of course, the knowledge that comes from Development Studies is not of itself any guarantee of correct decisions or of co-operation, but a great many people in positions of responsibility and authority, with power to affect quite profoundly the course of development, take the wrong decisions and the wrong turnings, often simply through lack of the right information.

The willingness of the urban elite to make sacrifices, to work harder, and to identify with the ordinary people is just as important—if not more so—as it is in respect of the educated working in the countryside, if there is to be rapid development.

Almost every child who goes into a secondary school goes there with a desire for a certificate at the end of the course, which certificate is believed to be a guarantee of employment, preferably clerical, and—so they all hope—with the Government, the universal provider. It is important that these young people be made to understand just how complex an economy has to be to sustain a large civil service. They must also be shown that agriculture is one of the original sources of capital, and how important it is to revitalize agriculture to promote development. Too many of the educated young have a contempt for the land. They see education precisely as a means of escaping from the land into offices.

I have already made the point that this subject would make its greatest impact in a school with a diversified curriculum, engaged in productive activities and in service to the community. This will provide opportunities for relating the subject matter of the course to practical activities and make it more meaningful.

It is not difficult to give practical examples of economic concepts like factors of production, consumption, the surplus, the division of labour, costs, wages, income, profits, savings and investment, capital accumulation and population growth and its effect on income. These concepts may appear abstract, but they are about realities in the lives of individuals and societies. The stories of pre-industrial history and of the agricultural and industrial revolutions are not unduly difficult to tell and to illustrate, and in some societies two or three of the processes are perhaps being telescoped. They can be illustrated by films, slides, pictures, charts and models. Students learning metalwork, woodwork, building science and agriculture will readily understand the importance of improved tools and skills to increasing productivity. They will know that tractors are more efficient in ploughing than oxen.

Once basic economic concepts have been assimilated, students have the essential tools for examining development. This is something that we are all assumed to be participating in and there are innumerable examples, in the lives of each of us, of how it affects us. These can be used to illustrate the problems on a national scale where there appear to be difficulties in understanding.

The course has been taught to students at Swaneng Hill and Shashe River Schools for some years now, and in a modified form it has been taught to Brigade trainees. There is no evidence that they understand or have learnt it less well than Science or Mathematics, which both have difficult and apparently abstract concepts. Some may have learnt it only by rote, but I am sure that many have assimilated its lessons as well as they have those of other subjects. Students at both schools have sat for written examinations in the subjects since 1969 and their performances in them have correlated well with their general performances. In 1972, a number of students sat for an examination in the subject offered by the Cambridge Examinations Syndicate and did well. One of the Secretaries of the Syndicate wrote of their performances that they did "surprisingly well", a reference, no doubt, to his earlier contention that the syllabus was "too difficult and too comprehensive".

Many people react in the same way on seeing the syllabus and the argu-

ments used by people like me in making the case for it. Discussion between adults describing the course and justifying it is a different matter from teaching it to children. The simplification and illustrations relevant to the classroom would be patronising in adult debate.

Conclusion

In the preface, I asked that this book should be regarded as an interim report. Only on that understanding could I write about my work with confidence. The timing of the report chose itself with the closing of a chapter in the life of Swaneng Hill School.

My reasons for stressing the interim character of the report will now be clear to the reader. The evolution of ideas grew out of the work, and, as the work goes on, so the evolution of ideas is likely to continue. In the beginning the experiment was, as someone has suggested, "highly personalized", and that may have been one of its handicaps. More and more people have since begun grappling with the problem and increasingly, as time goes by, the evolution of ideas is involving a greater exchange of thought and experience amongst a larger number of people.

A great deal of the book is about past experience and the response to it, not only of myself but of others as well. We were responding to the real numan problems of many hundreds of people who can be seen as a microcosm. Their problems are not unrepresentative of those of the wider society.

Some of the book is devoted to prognostication and there is a certain amount of speculation. The glimpse into the future is largely my own, and again this may appear to be a drawback. If the case for the wider replicability of some of our programmes is as strong as I hope it is, it has nevertheless yet to be *proved*. It will be my own business in the future—and I think that of several others engaged in the same work—to try to prove the case.

The purpose of the interim report is to draw guidelines for the future from past experience. The experience of the past needs a full and adequate description; the case for the future needs a full and proper exposition and explanation. The very act of reporting on my work is an attempt to persuade others to involve themselves in the problems, the programmes and the experiments.

The wider replication of such programmes as are described in the book will ultimately depend on how far they are practically applicable by a variety of different people in different places.

How strong is the case for wider replicability which I have tried to make? I have tried to work out solutions to all the various constraints which I have been able to identify; the proposed solutions involve a certain amount of forecasting, but the forecasts are not unrelated to actual experience. We shall, for a while, need some high-calibre people in the early stages of new programmes, as well as for the phase of expansion of the existing ones. Maybe this report will attract some; it would not be the first time that that has happened. The financial constraint is not necessarily the greatest. I have suggested that 10 new Brigade centres can train and establish in employment some 5 280 people over 6 years for R2 700 000. Over 15 years, they could possibly train and employ 13 200 for an additional R1 800 000 or, allowing for rising costs, R2 500 000, a total of R5 200 000. Ten cost-covering schools and employment structures for graduates might cost R5 100 000 to educate and employ 2 240 over 15 years. The total cost of 10 such programmes in respect of Brigades and a new type of school for 15 440 people would be R10 300 000. It would not be a shortage of capital which would prevent us from multiplying these figures by 5 or even 10. Even if my figures were 100% wrong, it would still cost only R200 million to educate, train and employ 155 000 people over 15 years. Botswana has already raised that much for its mining development, to create additional employment for perhaps only 20 000.

The bottlenecks may not even be in staff and marketing, though both will present formidable problems. The difficulty in marketing may be in maintaining a continuing diversification and in devising appropriate tools and techniques to go on introducing and producing new and different products.

The greatest problems will, I think, be in improving incomes and in getting a response from the people. Success may ultimately depend on the creation of a movement, of a new and different general outlook which will inform and direct the actions of people on a massive scale.

One has to start with faith in the ordinary people, with the conviction that they can and will respond to programmes such as these on a massive scale. One can easily be inspired by, and accept the words of, a Frantz Fanon.

"It is only when men and women are included on a vast scale in enlightened and fruitful work that body and form are given to that consciousness (of the full potential of their humanity). Then the flag and the palace where sits the Government cease to be symbols of the nation. The nation deserts these brightly lit, empty shells and takes shelter in the country where it is given life and dynamic power."

It is more difficult—and tiresome—to devise the immediate, practical and feasible programmes that will give effect to an inspiring vision. The success of such programmes may help to foster the creation of a new movement and of a new general outlook.

The leaders must have faith in the people, but the people need to have faith too, faith in their leaders and faith in themselves. There must be leadership at the top, throughout the Government, in the Districts and in the villages. It must be mutual faith and it must be based on other considerations besides the material and financial ones.

We are at least fortunate in Botswana in having a Government which, generally speaking, is willing and able to recognise and identify its problems fairly clearly, willing to experiment cautiously itself and to tolerate experimentation by others. There is a growing acceptance of the need for a harmonised, dual strategy for development, and increasing awareness of the difficulties entailed in it. Whilst there is not as yet a middle class in Botswana, comparable with those of the developed world, it is in formation. The Government is dependent on the support of the kind of people who are being coalesced in the emergence of such a class (as well as on the unquestioning tribal loyalty of the dominant Bamangwato people to the President, Sir Seretse Khama). The Government's main problem in implementing radical policies will be in carrying along with it its influential, vocal, emerging middle class. Despite that, the general climate for further experimentation along the lines suggested in this book is, I believe, a good one.

What the present situation permits to individuals like myself is the pursuit of relatively small programmes which may be the seeds of larger ones and which may carry in their genes the characteristics of the macrocosm, in so far as we can foresee them. I want to see a more truly democratic human future, but I also recognise that progress towards it must be built on the minds, hearts and skills of many ordinary people.

APPENDIX 1

A Model Farmers' Brigade

Capital costs and annual budget

The capital costs would include a large element of cattle purchases and the numbers of cattle required would be determined by estimates of revenue required to meet costs. Recurrent costs are therefore examined first.

Recurrent costs

It will be realized that, as a Brigade builds up, it will have 10 trainees on the institutional farm at any time during the first year, 20 during the second and 30 during the third.

Capital and recurrent costs (in rands)

	1st year	2nd year	3rd year	Each year thereafter
1. Training costs, incl. all salaries	4 000	4 000	6 000	8 200[a]
2. Allocations for capital improvement (annual provision)	500	1 000	1 000	1 000
3. Capital formation for village farm, R50 per trainee per year. Provision is made for both those on the farm and those in the villages	1 500	2 000	3 000	3 000
4. *Overhead and unallocated expenses* Administration (incl. office supplies, telephones, postage, licences, insurance)	500	700	1 000	1 000
5. Maintenance, fuel and lubricants	1 000	1 000	1 500	2 000
6. Draught-animal maintenance	200	300	300	300
7. Provision for depreciation	2 000	2 500	3 500	4 000
8. Shortfall on allowance under (1) for salary for expatriate instructor for 3 years	2 000	2 000	2 000	
Total	11 700	13 500	18 300	19 500

[a] Increases because subsidy of manager's salary ends.

Revenue

Beef

1. Immature cattle would be bought for fattening to produce immediate revenue, but there would be a progressive build-up of a breeding herd and a number of draught oxen would also be purchased. The beef section should produce just over one-half of the total revenue.

(i) Immature cattle should produce about R14 profit per beast per year; immature cattle will probably cost R50 each.

(ii) Breeding-herd profits should be reckoned at about R35 per cow per year. However, there would be no cash income in the first year, and about two-thirds in the second year, based on the first year's stock. The aim should be to buy about 120 cows with 120 calves at a total cost of R85 per cow and calf, each year for the first three years.

2. The income shown from each operation is net of direct production costs.

Revenue (in rands)

	1st year	2nd year	3rd year	Each year thereafter
Fattening cattle	5 500	2 680		
Breeding herd	–	4 200	8 400	12 600
1. *Total beef* (rounded to nearest R100)	5 500	6 900	8 400	12 600
2. *Goats*				
Meat goats	250	300	750	1 000
Angora goats	200	300	400	500
3. *Small dairy* (10 cows) net	250	250	250	250
4. *Poultry* net	1 000	1 000	1 500	2 000
5. *Other small stock*				
Pigs and sheep	300	300	300	300
6. Crops: Garden and field incl. intensive horticulture, contour-strip ploughing, specialising in drought-resistant crops, and maximising water-use techniques	1 500	2 000	2 500	2 500
7. *Other income*	500	500	500	500
8. Subsidy for salary of expatriate manager for 3 years	2 000	2 000	2 000	
Total revenue	11 500	13 550	16 60	19 650
Total expenditure	11 700	13 500	18 30	19 500
Profit (Loss)	(200)	50	(1 700)	150

Total deficit at end of fourth year 1 700. An item is provided in capital estimates to meet this.

Capital

Capital required to purchase 360 cows and 360 calves, at the rate of 120 cows and calves per year for the first three years, plus 396 immature cattle for maturing, to be bought and re-sold in the first year, and 192 in the second year.

Total capital required for cattle:		30 000
Fencing		3 000
Initial fencing around the ranch to be two-strand only, in order to establish secure possession of ranch. Camps to be established and external fencing completed year by year from funds for capital improvement.		
Provision of water		
Boreholes and additional surface supplies, including storage and reticulation at ranch and at farm		4 000
Small stock		
Goats, local and Angora, pigs and sheep, poultry		3 000
Arable land		
(incl. fencing)		500
Small dairy		
10 cows and equipment		1 500
Equipment and tools and animal-drawn transport		1 000
Buildings		
Farm buildings and ranch buildings	1 600	
Classroom	300	
Manager's house	1 100	
Staff quarters	1 500	
Dormitory	1 500	6 000
Subsidy for manager's salary		8 000
Furniture and fittings		1 000
Subsidy of loss over 4 years		1 700
(*The per capita cost for 60 trainees R 1 000*)		59 700

Note. The reader will see that Anthony Martin suggests (pp. 207 and 208) that R91 000 might be necessary for a model Farmers Brigade. The costing of this proposed model recognises that, increasingly, financing of water supplies around major villages is being undertaken by Central and Local Government; that financing of housing can be undertaken in conjunction with the Botswana Housing Corporation; and that tractor and transport services can be provided through co-operative and pooling arrangements.

APPENDIX 2

Accounts of the Serowe Brigades

Serowe Builders' and Carpenters' Brigades: Auditor's Report

This is the second year that the Brigade's income alone has been sufficient to cover all the costs of the Brigade. The *net profit* or surplus for the 10-month period of 1970 was R1 526, and for 1971 R454. The main reason for this drop in profit appears to be a rather large increase in the total monthly wages and salaries bill, while there was no increase in the monthly income. This amount of profit for 1971 was really very marginal. It will require good management to assure that this figure does remain an actual profit for 1972.

With the Brigades' productive income being sufficient to cover all recurrent costs, the indirect role of *subsidies* has been to provide capital for the Brigade. Directly, the subsidies pay certain operating costs, freeing part of the productive income for capital expansion. For 1971, the R2 729 subsidized surplus has not been used for the acquisition of additional capital assets but has rather been allowed to expand working capital, thus resulting in an improved liquid position for the Brigade. The following is a comparison of the current accounts for 1970 and 1971.

1970 (in rands)		1971 (in rands)
322.43	Bank and cash accounts	917.36
7 459.86	Accounts receivable	6 997.15
1 200.00	Materials inventory	1 037.68
8 982.29	Current assets	8 952.19
6 888.39	Accounts payable	3 797.46
2 093.90	Net current assets	5 154.73

Serowe Builders' and Carpenters' Brigade

Income Statement
Year Ending December 31, 1971 (in rands)

Income		
Earned income	33 128.12	
Fees	1 067.75	34 195.87
Expenses		
Administration	1 009.60	
Salaries & wages	11 979.60	
Academic teachers	1 733.00	
Materials	12 078.68	
Tools expenses	1 274.52	
Transport of students	240.07	
Medical	162.00	
Academic supplies	77.05	

Food	4 368.77	
Dormitory depreciation & utilities	524.00	
Depreciation (shop & office equipment)	73.00	
Miscellaneous	221.42	33 741.71
Net surplus		454.16
Subsidies (add as income)		
Peace Corps manager (local rate)	720.00	
World Food Programme	925.00	
Swaneng Hill School		
Water & electricity for dormitories	300.00	
Office rent	180.00	
Classroom rent	150.00	2 275.00
Net subsidized surplus		2 729.16

Balance Sheet
December 31, 1971

Assets			*Liabilities & capital*	
Petty cash		.22	Accounts payable	3 797.46
Bank		917.14	Grants	7 308.86
Accounts receivable		6 997.15	Accumulated surplus	1 881.37
Materials inventory		1 037.68		
Tools (normal level)		800.00		
Office equipment & furniture	255.00			
Accumulated depreciation	205.00	50.00		
Dormitory furniture	364.50			
Accumulated depreciation	167.00	197.50		
Dormitories	3 000.00			
Accumulated depreciation	450.00	2 550.00		
Carpentry. workshop	550.00			
Accumulated depreciation	112.00	438.00		
		12 987.69		12 987.69

Income and Expenses by Cost-covering Steps for Year Ending December 31, 1971 (in rands)

Income				
Earned income				34 195.87
Expenses				
1. Production				
Materials	12 078.68			
Transport of students	240.07			
Tools expenses	1 274.52		13 593.27	
2. Overheads				
Administration	859.60			
Salaries & wages	11 979.60			
Medical	162.00			
Miscellaneous	221.42		13 222.62	
3. Essential training				
Classroom rent	90.00			
Supplies	48.05			
Teachers' salaries	900.00		1 038.05	
4. Depreciation				
Office equipment	45.00			
Carpentry workshop	28.00		73.00	
5. Academic training (non-vocational)				
Teachers' salaries	833.00			
Classroom rent	60.00			
Supplies	29.00		922.00	
6. Trainees' room & board				
Income from students' fees		−1 067.75		
Food	4 368.77			
Dormitory utilities	300.00			
Depreciation on dormitories & furniture	224.00	4 892.77		
7. Capital expansion			3 825.02	
8. Non-essential liaison & research			00.00	32 673.96

Reconciliation with Income Statement

Surplus, incl. fees	1521–91
Less fees	−1067–75
Net surplus	454–16
Add subsidies	+2295–00
Net subsidised surplus	2729–16

Serowe Textile Workshop

Income Statement

December 31, 1971, to December 31, 1972 (in rands)

	Dressmaking		Printing		Weaving		Total	
Sales								
Off sales	+3 304.88		4 507.17		4 348.54		12 160.59	
	+1 016.04		1 147.54		255.58		2 419.16	
Total Sales	4 320.92	+4320.92	5 654.71	5 654.71	4 604.12	4 604.12	14 579.75	14 579.75
Cost of goods sold								
Beginning inventory	+2 470.10		2 011.50		969.88		5 451.48	
Purchases	+3 734.28		4 332.09		3 191.38		11 257.75	
Cost of goods available for sale	6 204.38		6 343.59		4 161.26		16 709.23	
Deduct ending inventory	−5 609.45		1 959.24		2 488.77		10 057.46	
Cost of goods sold	594.93	594.93[a]	4 384.35	4 384.35[a]	1 672.49	1 672.49	6 651.77	6 651.77
Gross profit (total sales minus cost of goods sold)	3 725.99	3 725.99	1 270.36	1 270.36	2 931.63	2 931.63	7 927.98	7 927.98
Minus								
Operating expenses								
Wages	766.67		1 133.66		661.53		2 561.86	
General administration	430.82		430.82		430.82		1 292.46	
Miscellaneous	19.81		19.81		19.81		59.43	
Food	361.04				676.23		1 037.27	
Transportation	62.07		62.07		62.07		186.21	
Depreciation	467.51		336.26		724.69		1 528.46	
Repair & maintenance	165.05		158.48		165.05		488.58	
Food subsidy	225.00		37.50		337.50		600.00	
Total operating expenses	−2 497.97	2 497.97	2 178.60	2 178.60	3 077.70	3 077.70	7 754.27	7 754.27
Profit (Loss)	1 228.02	1 228.02	(908.24)	(908.24)	(146.07)	(146.07)	173.71	173.71
Add non-cash expenses								
Depreciation	+ 467.51		+ 336.26		+ 724.69		+1 528.47	
Food subsidy	+ 225.00		+ 37.50		+ 337.50		+ 600.00	
Net cash inflow (outflow)	1 920.53		(534.48)		916.12		2 302.17	

[a] Some of the costs of dressmaking materials were charged to printing.

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Balance Sheet
December 31, 1972 (in rands)

Assets		
Cash on hand		20.00
Bank balance		989.34
Fixed deposit		500.00
Accounts receivable		7 897.63
Inventories		
Dressmaking		
Printing		
Weaving		10 057.46
Buildings	13 249.93	
Minus depreciation	1 957.29	11 292.64
Equipment	7 545.31	
Minus accumulated depreciation	3 988.72	3 556.59
Fittings	950.00	
Minus accumiated depreciation	278.81	671.19
Office supplies		217.36
Total assets		35 202.21
Liabilities & capital		
Accounts payable	4 229.90	
Trainees' deposits	426.00	
Development loan (SIDA)	2 726.00	
Total liabilities		7 381.90
Subsidies 6 620.62		
Grants 41 274.09		
Total grants and subsidies	47 894.71	
Minus accumulated loss	−20 248.11	27 646.60
Add 1972 profit		173.71
Total liabilities and capital		35 202.21

Tannery Brigade

Income Statement

December 31, 1971, to December 31, 1972 (in rands)

Total sales		1 100.60
Cost of goods sold		
Beginning inventory	341.67	
Purchases	921.50	
Cost of goods available for sale (beginning inventory + purchases)	1 263.17	
Deduct ending inventory	664.20	
Cost of goods sold		598.97
Profit (loss) on sales		501.63
Other income (fees)		60.00
Gross profit		561.63
Operating expenses		
Wages	750.00	
Food	315.00	
Administration	131.54	
Interest on loans	74.08	
Food subsidy	175.00	
Depreciation (building)	184.40	
Depreciation (equipment)	48.35	
Total operating expenses		1 678.37
Profit (loss)		(1 116.74)
Add non-cash expenses		
Food subsidy	175.00	
Depreciation (building)	184.40	
Depreciation (equipment)	48.35	
Total non-cash expenses		407.75
Cash (outflow)		(708.99)

Balance Sheet

December 31, 1972

Bank balance		92.88	Accounts payable			1 755.27
Fixed deposit		4 000.00	Oxfam loan			3 662.24
Accounts receivable		109.98	Accumulated interest on loan			65.35
Inventory		664.20	Subsidies (World Food)			350.00
Buildings	3 688.02		Grants		6 190.55	
Minus accumulated depreciation	255.60	3 432.42	Minus accumulated losses to end 1971	2 027.14		
Equipment	670.90		1972	1 116.74	3 143.88	3 046.67
Minus accumulated depreciation	90.85	580.05				
Total assets		8 879.53	Total capital & liabilities			8 879.53

Serowe Electrical

Balance Sheet
December 31, 1972 (in rands)

Assets			*Liabilities & capital*	
Bank account		2 011.03	Accounts payable	3 782.17
Accounts receivable		1 479.24	Accumulated surplus	
Material inventory		2 990.88	To Dec. 31, 1971	300.00
Truck	780.00		Dec. 31, 1971, to Dec. 31, 1972	3 095.98
Minus accumulated depreciation	200.00	580.00		
Office equipment		117.00		
Total assets		7 178.15	Total capital & liabilities	7 178.15

Income Statement
December 31, 1971, to December 31, 1972

Sales (earned income)		15 186.83
Cost of goods sold		
Beginning inventory	673.32	
Purchases	9 209.06	
Cost of goods available for sale	9 882.38	
Minus ending inventory	2 990.88	
Cost of goods sold	6 891.50	
Gross profit		8 295.33
Operating expenses		
Wages	2 290.65	
Administration	452.80	
Transportation	1 924.91	
Miscellaneous	248.22	
Lessons	82.77	
Depreciation	200.00	
Total operating expenses		5 199.35
Profit		3 095.98

Ralph K. Brown
Peter K Mosotho

Serowe Farmers' Brigade

Balance Sheet
for the Year Ending December 31, 1972 (in rands)

Assets		
Cash in hand		50.00
Settlement account		1 118.42
Accounts receivable		1 624.92
Inventory (material)		3 378.69
Inventory (livestock)		32 644.00
Furniture & fixtures	1 176.26	
Accumulated depreciation	877.06	299.20
Tractor & implements	6 360.87	
Accumulated depreciation	4 110.67	2 250.20
Plant & equipment	11 757.27	
Accumulated depreciation	9 039.01	2 718.26
Fencing	14 416.18	
Accumulated depreciation	6 026.84	8 389.34
Water systems	14 378.59	
Accumulated depreciation	10 615.15	3 763.44
Buildings	29 183.71	
Accumulated depreciation	7 861.81	21 321.90
Land development		182.11
Total assets		77 740.48
Liabilities & capital		
Bank overdraft		3 002.12
Grants & subsidies		157 333.68
Accounts payable		3 518.53
Sub-total		163 854.33
Less		
Accumulated loss to Dec. 31. 1971	(71 970.01)	
1972 Loss	(14 143.84)	-86 113.85
Total liabilities & capital		77 740.48

Grants and Subsidies
Received as of December 31, 1971 (in rands)

1967:	Danish Government		42 076.00
1968:	Danish Government		44 823.15
1969:	Danish Government	44 899.83	
	Church World Service	998.49	
	Oxfam (Pilot Project)	125.83	
	Oxfam (Manager's House)	2 000.00	
	Oxfam (Manager's Salary)	2 400.00	50 424.15
1970:	Danish Government	10 400.00	
	Oxfam (Manager's Salary)	2 400.00	
	Botswana Christian Council (Oil Expeller)	1 198.38	
	Church World Service (Holzinger Salary)	712.00	14 710.38
1971:	Oxfam (Manager's Salary)	2 400.00	
	Ministry of Education	100.00	2 500.00
1972:	Oxfam (Manager's Salary)	2 800.00	2 800.00
	Farm grants received to date		157 333.68

Grants received for settlement project

1970:	Dulverton Trust	1 712.14
	Welsh Young Farmers	1 208.41
	David Hughes School, Anglesey	2 515.00
	Total	5 435.55

Income Statement
31 December 1971, to 31 December 1972 (in rands)

Production income		
Ranch		
Sales	7 036.97	
Dairy		
Sales	13 219.56	
Garden		
Sales	2 476.21	
Poultry		
Sales	3 885.45	
Stock increase	78.25	
Goats		
Sales	724.75	
Dry-land crops		
Sales	157.97	
Forestry		
Sales	200.45	
Total production income		27 779.61
Production costs		
Ranch		
Stock decrease	1 785.00	
Salaries & wages	1 221.04	

Licks & veterinary			
Licks	508.93		
Veterinary	313.13	822.06	
Transport & sundries			
Transport	319.47		
Sundries	29.30	348.77	
Depreciation		1 840.86	
Total ranch production costs			6 017.73
Dairy			
Stock decrease		1 515.00	
Salaries &wages		2 004.25	
Feed		3 917.27	
A. I. & veterinary			
A. I.	290.82		
Veterinary	420.27	711.09	
Labour & transport			
Labour	31.89		
Transport	404.47	436.36	
Materials & packing			
Materials	1 156.51		
Packing	1 774.17	2 930.68	
Depreciation		1 781.53	
Total dairy production costs			13 296.18
Gardens			
Salaries & wages		1 155.05	
Other			
Insecticide	112.29		
Seeds	351.24		
Fertilizer	135.76		
Sundries	26.39		
Packing	80.97		
Produce & transport	20.33		
Vegetables for resale	192.83	919.81	
Total garden production costs			2 074.86
Poultry			
Salaries & wages		411.90	
Other			
Packing	172.79		
Produce transport	37.20		
Chicks	360.85		
Materials	8.71	579.55	
Feed		1 650.23	
Depreciation		304.73	
Total poultry production costs			2 946.41
Goats			
Stock decrease		966.00	
Salaries & wages		279.20	
Other		98.31	
Total goats production cost			1 343.51

Lands			
General			
Seed	39.93		
Fertilizer	234.93		
Other	33.17	308.03	
Depreciation		60.80	
Total production costs allocated to lands			368.83
Forestry			
Salaries & wages		421.70	
Other		83.45	
Total forestry production costs			505.15
Total production costs			26 552.67
Net production income			1 226.94
Other income			
Tractor & plant hire		369.10	
Off-sales profit		46.97	
Re-sales profit		111.78	
Miscellaneous			
Rent	570.60		
Fees	210.20		
Grazing	16.40		
Other	19.36	816.56	
Total other income			1 344.41
Total:Net production income & other income			2 571.35
Overheads			
General salary & wages		4 830.33	
Administration			
Bank charges	277.12		
Post & phone	319.91		
Insurance	130.28		
Other	238.00	965.31	
Travel & transport		98.86	
Trainees' terminal grants		390.55	
Other trainee expenses			
Bonus	187.80		
Rations	1 834.97	2 022.77	
Teaching		143.81	
Extension follow-up			
NBCC	53.34		
Village work	7.90	61.24	
Maintenance of plant & vehicles			
Tractor	285.35		
Trailers	83.86		
Carts	54.78		
Ranch (plant & equipment)	128.90		
Farm electricity	525.13		
Farm water	20.57		
Farm (plant & buildings)	559.64	1 658.23	
Animal draft		134.55	

Fuel & lubricants			
Ranch	427.10		
Generator	865.91		
Tractor	282.34		
Irrigation	24.15	1 599.50	
Small tools		107.00	
Depreciation		4 703.04	
Total overhead costs			16 715.19
Loss			(14 143.84)
Add			
Subsidies (Oxfam, Manager's Salary)			2 800.00
Depreciation			8 630.16
Loss from subsidized operation			(2 713.68)

Serowe Engineering and Engine Rebuilders

Balance Sheet
November 1, 1972 (in rands)

Assets		
Cash on hand (Nov. 1, 1972)		645.70
Bank balance (current account)		16 221.24
Fixed deposit		10 175.15
Accounts receivable	5 605.80	
Less: allowance for bad debts	455.29	5 150.51
Inventory (Nov. 1, 1972)		14 396.92
Building	9 284.28	
Less: accumulated depreciation	3 200.00	6 084.28
Plant & equipment	37 747.00	
Less: accumulated depreciation	6 000.00	31 747.60
Office equipment	965.00	
Less: accumulated depreciation	272.00	693.00
Fixtures & fittings		791.00
Total assets		85 905.40
Capital & liabilities		
Accounts payable		5 991.17
Loans		
Oxfam	18 000.00	
Total loans		18 000.00
Capital grants		
British Petroleum	4 000.00	
Oxfam	3 500.00	
Other	2 000.00	
Bernard Van Leer Foundation	10 000.00	
	3 000.00	
War on Want	1 250.00	
(SAIH) Norway	7 000.00	
Total capital grants		30 750.00
Retained earnings		
To Nov. 1, 1971	21 190.93	
Nov. 1, 1971, to Nov. 1, 1972	9 973.30	
Total retained earnings		31 164.23
Total capital & liabilities		85 905.40

Income Statement
November 1, 1971, to November 1, 1972 (in rands)

Sales & services			
Factory	32 526.75		
Garage	37 399.85		
Pumps	11 146.74		
Gross sales			81 073.34
Cost of goods sold			
Beginning inventory (Nov. 1, 1971)		11 220.00	
Purchases			
Factory	18 682.92		
Garage	21 322.94		
Pumps	12 663.91		
Total purchases		52 669.77	
Cost of goods available for sale (beginning inventory + purchases)		63 889.77	
Deduct ending inventory (Nov. 1, 1972)		14 396.92	
Cost of goods sold			49 492.85
Gross profit on sales			31 580.49
Other income			
Interest earned	677.43		677.43
Gross profit			32 257.92
Operating expenses			
Wages		12 277.29	
Administration & travel		3 615.70	
Transportation		1 620.80	
Postage & telephone		880.32	
Bank charges		435.22	
Bad debts		155.29	
Depreciation[a]		3 300.00	22 284.62
Net profit			9 973.30

November 14, 1972
Serowe, Botswana

To Whom It May Concern

This is to confirm that the accounting records of the Serowe Engineering and Engine Rebuilders have been examined by me, and to the best of my knowledge the accompanying reports represent fairly the operations and financial situation of the Brigade.

Ralph K. Brown
Trust Accountant

[a] Depreciation appears to be low. Equipment worth R18 000 was purchased only at the *end* of 1972.

APPENDIX 3

The Development Studies Syllabus

1. Economics

(i) *People's material wants and needs and how they are satisfied by goods and services*

People's material wants and needs are shown to be built up from the most basic "survival needs" for food, clothing, shelter, etc. The subject matter of economics is shown to be the satisfaction of material needs and wants. Economic development is shown to be the process by which these material wants are more fully satisfied, namely, the process by which the production of goods and services is increased. People's material wants and needs are contrasted with their non-material needs (for love, justice and so on). The difference between goods and services are made clear and students can familiarise themselves with it, for example, by listing goods and services produced in, say, their village or country or at their school.

(ii) *The production of goods and services and the factors of production*

The production process is analysed in the simplest possible terms. It may be helpful to show first that goods "come partly from man, partly from nature". The next step is to show what different kinds of things are needed to produce anything at all. These are described conventionally as the "factors of production" and given as natural resources (including land), labour, tools and knowledge or skill. Capital may or may not be *mentioned* at this early stage as an independent factor of production. But its analysis should almost certainly be postponed until later in the course.

(iii) *Consumption, distribution and exchange. The distinction between consumer goods and producer goods*

This sub-section may be helpfully introduced by posing the question: "What happens to goods when they have been produced?" It is shown that goods of any kind may be exchanged or distributed. It is also shown that there is an important distinction between goods which directly satisfy people's material wants and needs (consumer goods) and those used to make things which directly satisfy people's material needs and wants (producer goods).

(iv) *The elementary production surplus*

This sub-section may be helpfully introduced by posing the question: "How are *more* goods produced?" At this stage the question is answered in the simplest possible terms. It is shown that, in order to increase production, a part of what is produced, namely, a "surplus", must *not* be consumed but must be used in ways which increase production later on, in other words, it must be invested. This can be shown quite simply, using a typical farming family as an example. It can be shown that the family may have deliberately to cut back its consumption or reduce its leisure time to achieve an investible production surplus.

(v) *Specialisation and the division of labour*

It is shown how specialisation and the division of labour can enable people to be more productive, and how historically specialisation has enabled people to pro-

duce more. Students are shown that, if a community is to increase its production at all, its productive members must be able to do a little better than simply satisfying consumption needs. Specialisation and "surplus time" after providing for consumption needs are shown to be logical repercussions of the original elementary surplus.

(vi) *Innovation and technical change*

This short sub-section looks forward to the later discussion of scientific method and its history. Simple and, as far as possible, non-technical answers are offered to the question "How are different and more efficient goods produced?"

(vii) *Money*

It is emphasised at the outset of this section that the production of goods and services, and increases in the production of goods and services, can take place, and historically have taken place, without the circulation of money. Money is shown as being thus in some sense secondary to the production process. It is then shown that nevertheless money is an enormous convenience, first as a medium of exchange, second as a means of measuring price or value, and third as a store of wealth. It may helpfully be emphasised in particular that "surpluses"—in the sense used in subsection (iv)—may be conveniently converted from goods and services into money and that historically this has happened.

(viii) *Employment and labour*

It is shown how, in communities where crop-planting and animal husbandry have replaced hunting and gathering, individuals may stop being single and independent producers. Some will become large-scale producers (or communal production units will evolve). Others will offer their labour (either freely or by constraint) in return for their subsistence or for wages. It is shown that the product is always divided—though, of course, in very varying proportions—between the employer and the employees.

(ix) *Costs, wages, income, profits, savings and investments*

Students are introduced, in language as simple as possible, to the notion of production costs (what a producer has to spend in order to produce his goods). They are also introduced to the notions of wages and income. Profits are then shown to be what is left over from the value of production after costs and all other charges have been subtracted. Savings are shown to be any part of the wages which is left over after consumption expenditure has been completed. Profits and savings are therefore shown to be special forms of the elementary "surplus" identified in sub-section (iv). It is shown that a community's production can only increase if, and to the extent that, its profits and savings are invested. It is emphasised that the word "profit" is used in an ideologically neutral way and does not imply any particular set of capitalistic or other production arrangements.

(x) *Trade and the trader's margin*

The trader is introduced as the man who specialises not in the production of some particular goods but in the business of exchange. Students are introduced to the notion of the trader's margin. It is shown, by examples, how the money received by the trader from goods is divided between himself and the producer of the goods. Again, it is emphasised that the trader need not be a private capitalist and that the exchange function can be carried out in various ways.

(xi) *Lending, borrowing and banking*

The moneylender and the banker are introduced. It is shown that, as far as economic development is concerned, the most important function of the banker and the moneylender is the function of ensuring that as large a proportion as possible of the community's profits and savings are invested. Again, it is shown that the banking and moneylending function need not be performed by private capitalists but can be carried out in different ways.

(xii) *Supply and demand, the market, productivity and the allocation of resources*

Students are introduced to the notions of supply and demand and to the notion of the market. It is shown that production is usually geared to demand. It is also shown that, from the viewpoint of economic development, demand is mainly important because it tends to influence what proportion of a community's surplus (its profits and savings) is invested to supply the demand. Changes in market size, and specifically an *expanding* market, are shown to be of importance in economic development for the same reason. Students are also introduced to the notion of productivity and it is shown how productivity is one of the main factors limiting the size of the market. Students are introduced, finally, to some of the main choices which a community may face when it decides how its surpluses (its profits plus savings) should be invested and how, more generally, its resources should be allocated. It is shown that the outcome of those choices may or may not be determined by strictly economic considerations.

(xiii) *Capital accumulation*

In this sub-section, students are shown how a community may increase the productive and social capital which it has inherited from the previous generation.

(xiv) *Elementary national accounts and taxation*

The notions of "national income" and the "national product" and of "*per capita* income" and "*per capita* product" are introduced. The discussion and analysis are taken to only a very limited point. The point the students are required to reach is one which will enable them intelligently to *compare* different experiences of rapid economic development or industrialisation. This section also includes an elementary discussion of taxation.

(xv) *The growth of national incomes and national products*

Students are introduced to the facts of changing and increasing national incomes and national products and, drawing on what they already know, the factors which determine these changes are reviewed.

(xvi) *Population growth and how it is related to the growth of national products and income*

Students are shown how population changes are one of the most important factors affecting changes in national income and the national product. They are introduced to the factors behind population changes.

2. Pre-industrial History

(i) *Hunters and gatherers*

The economic and social lives of pre-agricultural hunters. The Bushmen are taken as a surviving example. The small size of the communities is emphasised,

their low population density and the very large land requirements which their way of life imposes. It is also emphasised that their way of life allows very little time for doing anything else than provide for survival needs. The very gradual improvement in their tools and weapons over thousands of years is noted. To correct the widespread misapprehension which identifies civilised societies with economically developed societies, the artistic achievements of the Bushmen and the attractiveness of their egalitarian arrangements are emphasised.

(ii) *The Agricultural Revolution*

The planting of crops and the first animal husbandry are briefly described and tentatively placed historically and geographically. Students are then shown how the new techniques "rapidly" spread to all the main land masses of the world, except Australia, or were independently invented in places where these introductions followed the original introduction. Man is less at the mercy of nature and has greater knowledge of how to use its resources.

(iii) *From the Agricultural to the Industrial Revolution*

(*a*) Agricultural development

The main early steps in the improvement of agriculture are noted: the discovery of how soil fertility may be renewed (making fixed-site cultivation possible); the invention of ploughs and the introduction of draught animals; the replacement of a wooden ploughshare by an iron one; the spread of useful food and other crops from parts of the world where they are indigenous to other parts. The economic importance of agricultural development is given special emphasis and it is pointed out that the first surplus for diversified production must nearly always come from agriculture and food production.

(*b*) The development of manufacturing and mining

Certain examples are given as illustrations—the loom, the potter's wheel, the printing press. The non-European origin of many of the most important pre-industrial inventions is emphasised. Throughout this sub-section the point is explicitly made and reinforced by illustration that technical change and economic development is not something which has only lately started or started with the first Industrial Revolution. It has a long and continuous history.

(*c*) Development in the building, construction and service industries

Again, various examples are given as illustrations. Early improvements in building technique and the first use of processed building materials are examined. The early history of teaching, medicine and other service industries is outlined.

(*d*) The development of power supplies

The first use of water and wind power is described. In advance of the historical discussion of the first Industrial Revolution, students may be shown that the widespread introduction of chemical (such as coal and oil) and other new sources of power was and is the most important technical change associated with industrialisation.

(*e*) Development in trade and transport

The first great expansion of trade is shown to be linked with the discovery of metals. The growing volume of trade in mediaeval and post-mediaeval Europe may be emphasised. Students will already, from their earlier work, appreciate the importance of the market size for economic development. They will now

see that the means of transport is one of the chief factors—in addition to productivity—which will determine market size.

(*f*) The development of banking

The growth of banking and the beginnings of "capitalistic" business in mediaeval and post-mediaeval Europe are described.

3. Science

(i) *Scientific method*

(ii) *The evolution of scientific method*

Scientific method is analysed and compared with other pre-scientific or magical methods of attempting to understand and acquire mastery over the physical world. The history of scientific method is described from its earliest origins, down to the scientific revolution. The relationship between the study and subsequent knowledge of the physical world and the technical innovation which has helped man to control his environment and take responsible advantage of its resources is considered in this section. The refinement of experimental procedure and its increasingly systematic contribution to knowledge of the world are examined briefly.

4. Politics

(i) *Analysis of main political terms*

Students are shown that people who live in groups or communities must have procedures for reaching collective decisions. The "politics" of a community are then shown to be its collective decisions or the ways in which it reaches these decisions. Politicians are shown to be people who are directly involved in making a community's collective decisions and political history is shown to be the history of the collective decisions of communities.

(ii) *Main different types of government*

Some main different types of government are simply identified—monarchy, the elementary "direct democracy" of the Bushman band, representative democracy, feudal or chiefly feudal rule, oligarchies of various kinds. Students are shown where some of these different types of government first originated. They are shown that it is always sensible to ask how a government is realted to the community it governs. They are shown that there is an important distinction between governments of rulers with unlimited or undefined powers and governments or rulers whose powers are limited or defined by agreement. They are also shown that there is an important distinction between governments which can be peacefully replaced by peaceful and agreed procedures and those which can only be replaced violently or by other non-recognised ways. They are shown that mass representative democracy is a quite recent phenomenon, which postdates the first experience of industrialisation. They are shown that it may always be sensible to ask whether a government reflects the special interest of a particular group in the community and they are introduced to the notion of a ruling class.

(iii) *Government functions and the efficiency of government taxation*

It is shown how, historically, government functions have tended to increase in step with economic development. It is shown that there is an important distinc-

tion between governments which attempt to control everything or almost everything in the community and governments which avow that peoples' private lives and thoughts should be, as far as possible within the limits of public safety, their own business. It is also shown that it is always sensible to ask how efficiently government performs its functions, and it is emphasised that, if economic development is to take place, governments must be reasonably stable. The dangers and inefficiencies of corruption and nepotism are also explicitly emphasised. Finally, taxation and government finance are discussed and the functions of taxation are examined.

(iv) *Government and the allocation of the community's surplus*

Students are shown that governments and ruling classes have been very important historically in influencing what proportion of a community's profits and savings should be invested, in determining the size of a community's profits and savings, and in determining what forms investment should take.

(v) *Property, slavery and the origin of government*

The evolution of government, in the sense of a group of full-time specialists responsible for community decision-making, from the "direct democracy" of the hunting band is described. Specialist governments are shown to have appeared after the Agricultural Revolution. Specialist governments are shown to be linked historically with the institution of private property. This sub-section also includes a discussion of the origin and economic significance of the institution of slavery.

(vi) *Some political characteristics of modern societies*

The impact on political institutions and policy of a substantial, politically aware, critical and informed public opinion, and the significant challenge to privilege.

5. Economic Development and Industrialisation

(i) *The main contrasts between pre-industrial and industrial societies*

The main material contrasts between industrial and pre-industrial societies are set out in a basically factual and statistical way. *Per capita* incomes are compared, as well as other main indicators of material prosperity (mortality and literacy rates, food consumption and other consumption standards). Other comparisons are set out, showing the much greater urbanisation and much reduced agricultural labour force in industrialised countries. Rates of growth and rates of investment are compared and students are introduced to the notion of the gap between material living standards in industrialised and preindustrial communities. Comparisons are made across time for the same country (for example, for Britain in 1750 and 1950), as well as between different countries today. (The social and cultural differences between industrialised and pre-industrial societies are not discussed in this subsection but held over for treatment in section 7.)

(ii) *The first Industrial Revolution and its origins*

The origins of the first Industrial Revolution are examined with a view to answering two main questions, namely, why did the first Industrial Revolution take place in north-western Europe and why did it take place in Britain? The British experience of industrialisation is then discussed under the following main headings:

(*a*) Natural resources (including geographical position) and human resources at the start of the Industrial Revolution.

(*b*) State of agriculture of industry, of transport and trade, etc. at the start of the Industrial Revolution.

(*c*) Level of skills and knowledge at the start of the Industrial Revolution and the state of adult literacy.

(*d*) Where the finance for industrialisation came from and the identities of the main innovators. In this sub-section we examine, among other sources of investment finance, the profits from the slave trade and from trade between Britain and its colonial possessions.

(*e*) Living standards and conditions of the working class during the Industrial Revolution and the beginnings of welfare and workers' protection legislation.

(*f*) The rate of economic growth during the successive stages of the Industrial Revolution.

(iii) *Some early experiences of industrialisation*

In this sub-section students examine the industrialisation experiences of various countries. Students may choose four of the following seven countries for special study: USA, USSR, Japan, France, Germany, Denmark, Yugoslavia. The examination follows the same main headings as in sub-section ii.

(iv) *The special problems of industrialisation today*

The special problems faced by communities which are just starting to industrialise today or where industrialisation, though originating perhaps in the last century, has still a way to go (as in India's case) are examined in this sub-section in some detail. The problems posed by the population explosion, by rising expectations and by the democratic control of governments are emphasised. The dilemma of increasing consumption—including welfare expenditure—or investment is examined. The problems of standards are considered and the tendency to spend on prestige products is dealt with. Students are introduced to both the advantages and disadvantages, for countries developing today, of the existence of highly mechanised production techniques. The manpower problem is discussed and the contribution which education policies can make towards its solution. More specifically, students are introduced to the danger of an educational system geared mainly to the production of an elite of white-collar workers. The key shortage of foreign exchange and thus the inadequate capacity to import capital goods is investigated and students are also made aware of the broad division of labour in the modern world, with the underdeveloped countries supplying mainly primary products to the world market and the developing countries supplying mainly manufactured goods.

(v) *Some contemporary experiences of industrialisation*

In this sub-section, students examine the present industrialisation experiences of various countries—Zambia, Tanzania, India, Brazil, South Africa, China, Cuba. Students may choose four of these seven countries for special study. The examination again follows the main headings (*a*) to (*f*) in sub-section (ii) above, but it is also undertaken in the light of the special problems discussed in sub-section (iv) above.

(vi) *The experience of industrialisation summarised*

Students review the experience of industrialisation in the different countries selected for special study. They both compare and contrast the experience and policies in mainly private-enterprise countries and in mainly state-enterprise ones.

6. The Economic Situation in the Student's Own Country and Locality

(i) *The economic level of the student's own country*

In this sub-section an assessment and measurement of the economy of the student's own country and its level of development is made. Its *per capita* income, its school enrolment, its mortality rate, its population growth and so on are all estimated and compared with the figures for other countries. Estimates are given of how income, etc. in the student's own country is changing.

(ii) *The main resources of the student's own country*

The natural and human resources of the students' own country and its resources of investment finance (actual and potential) are examined.

(iii) *The main development problems of the student's own country*

In this sub-section, students examine how far their own country is having to face the special problems of contemporary industrialisation identified in (iv) above and what other particular development problems of its own are being faced.

(iv) *The economy of the student's locality*

This section examines briefly the economy of the student's immediate locality, its levels and sources of income, its natural and human resources, and so on.

(v) *Ways of developing or contributing to the development of the student's own locality*

Finally, in this sub-section, an attempt is made to show how the economy of the student's neighbourhood is being or can be developed. Possible contributions which might be made by a student body are discussed and the economic development rationale of, for example, voluntary building work is considered.

7. Social and Cultural Change

(i) *Contrasts in social and cultural patterns between pre-industrial and industrialised societies*

In section 5 (i) students were introduced to some of the main *material* contrasts between industrialised and pre-industrial societies. In this subsection, they examine some of the main contrasts in the social and cultural patterns between pre-industrial and industrialised communities.

(ii) *The historical effects of industrialisation on cultural and social patterns*

Students are shown how, historically, industrialisation has broken down ancient cultural and social patterns in many different countries.

(iii) *Non-material and non-economic needs and wants and how these are satisfied*

Students are reminded in this sub-section of something noted at the beginning of the syllabus in 1 (i), namely, that human beings have non-material as well as

material needs and wants and it is shown how these are satisfied both in pre-industrial and industrialised societies.

(iv) *Contemporary efforts to soften the impact of industrialisation on social and cultural patterns and to protect non-material and non-economic goals*

Against the background of mounting contemporary dissatisfaction with the anti-social effects of industrialisation, students are shown that efforts to minimize or eliminate these effects are now being made in many different countries.

(v) *Social and cultural patterns and non-economic goals in the student's own country. The likely impact on them of industrialisation. Ways in which non-economic goals may be protected.*

Students examine the social and cultural patterns and the non-material goals of their own country and look at the impact and likely future impact of industrialisation upon them. A special effort is made to separate social and cultural patterns which are incompatible with successful industrialisation and development (for example, treating cattle as prestige symbols rather than economic assets) and others which, provided imaginative policies can be devised, can be expected and encouraged to survive industrialisation.

APPENDIX 4

Extracts from a Report on the Brigades in Botswana

By Anthony Martin

This report has been accepted and approved by the Government of Botswana.

Introduction

I was invited to Botswana in February 1970 by the National Brigade Co-ordinating Committee, which asked me to report to it on the progress of the training institutions known as Brigades and to suggest possible guidelines for their future development. I arrived in Botswana on March 5th and left on March 29th. In these three and a half weeks, I visited all the existing Brigades, as well as the sites of some proposed new ones, and I met a wide variety of people directly or indirectly concerned with them.

The central question is basically whether one is to take a "high" or a "low" view of the potential of the movement. Those who believe that Brigades should be primarily concerned with training for employment are committed to the low view; if they are right, the main problem is simple—to identify the likely demand for various types of skilled manpower in the modern sector, to set against that the projected supply of such manpower from Brigades and other training institutions (at present only the Botswana Training Centre), and to frame a policy for bringing the two into alignment. Those who take the "high" view believe that the Brigade movement must at least aim to make a greater contribution than this. They argue that it is not enough to wait until the modern sector generates enough jobs to absorb a satisfactory number of school-leavers. The problem is so great and so urgent that, if Brigades are to make a meaningful contribution towards its solution, they must seek to provide a training and to create a post-training situation which will enable a much larger number of trainees to earn a tolerable living in the rural sector. In effect, this means developing a formula for Farmers' Brigades which will be capable of widespread replication.

Farmers' Brigades

The Serowe Brigade

As we have seen, the first Farmers' Brigade was started at Serowe in the middle of 1967, on the assumption that, since most people in Botswana will have to make their living on the land for the foreseeable future, any serious programme aimed at equipping young people to lead more productive lives had to find a way of

training them to be more productive farmers. It was felt that the Brigade approach already used successfully for builders should be extended to farmers. What this meant was establishing a farming enterprise which could pay its own way and cover the costs of the training. So far as their post-training future was concerned, the trainees were encouraged to think in terms of a co-operative farming settlement.

This is not the place, nor am I the person, to attempt an evaluation of the operation as a farm. But it seems reasonable to make some points about the farming side. In general, the experience at Serowe seems to lend support to those who argue that it is not sensible in Botswana to encourage young potential farmers to think in terms of arable farming as a generator of worthwhile cash income.

The other main point to be made about the farming operation at Serowe concerns the dairy. The arguments in favour of the decision to make a large investment in a dairy are open to question. The size of the operation involved making an effort to sell milk in "urban" markets like Gaborone, a complicated business requiring attention to questions like dairy hygiene, pasteurising, packaging and transport. The lesson for any new project is that, if a dairy is contemplated, it should be no bigger than is needed to supply the local market.

Still on the farming side, one aspect of the Serowe operation which has proved entirely successful and which seems obviously worth following by any similar Brigade that has the necessary grazing is its use of the Government's grazier scheme. Early in 1969, 50 cattle were taken on and in 10 months the Brigade had cleared R17.50 per beast. It is important for all concerned with the future of Farmers' Brigades to keep the possibility of making fuller use of this scheme firmly in view, as it may provide part of the answer to one of the most intractable problems so far as the post-training future of the trainees is concerned. This is the problem of designing a post-training situation involving farmers from any but the richer families, who will have access to the capital needed to engage in cattle-farming, an activity without which the practice of agriculture in Botswana is little better than a waste of time. More about this later.

These purely farming matters, however, are dwarfed in significance by the other questions that surround Farmers' Brigades. By far the most important fact about the experience at Serowe to date is that there is still no solution to the problem of the trainees' future. The same applies *a fortiori* to the Farmers' Brigade set up on the Serowe model at Shashe River School in 1969. Basically, the choice in designing a farm training scheme is whether to envisage some form of settlement by the trainees when they have completed their course; the other alternative is to prepare them to return to their family farms and apply their expertise to increasing productivity there. A great many arguments can be advanced in favour of or against either course, and in this thicket of debate it is not always easy to see the wood for the trees. However, it seems clear to me that the arguments against settlements and in favour of returning trainees to their families are essentially negative ones: they derive most of their force from the social, psychological and, to a lesser extent, economic difficulties in the way of establishing viable settlements and keeping them going. Once again there is a choice between the less ambitious but easier option and the harder but potentially more exciting one. Just as in the other central dilemma facing the Brigade movement, which is whether to train for exployment or to create employment, the chief argument against the easier option is that it cannot make more than a modest contribution to the problem of unemployed youth, while the case against the harder option is that it may not be practicable, so in this other

quandary the case for settlement is that, if it works, it could offer a model capable of widespread replication and the case against it is that it may not work.

Difficulties at Serowe

The facts at Serowe are that the Farmers' Brigade was started on the assumption that the post-training situation would be one of co-operative settlement but that the attempt to organise such a settlement has proved impracticable. There are several causes for this failure and it is important to try and understand their relative significance.

One is the attitude of the trainees themselves. Obviously a co-operative settlement cannot be contemplated unless there is a high degree of motivation and understanding of what is involved among its potential members. The first group of trainees at Serowe had been encouraged from the time of their recruitment to think of themselves as future members of a co-operative; it is hard to say to what extent they accepted this picture of their future, but there is reason to think that at least some of them were unhappy from the start about the fact that they would not be getting any form of certificate at the end of their training. The decision not to give a certificate was based on the ground that to do so would encourage unreal expectations, since there are few or no paid jobs in Botswana to which possession of such a certificate would provide entry. It was constantly pointed out to the trainees that they were in a totally different situation from, say, the secondary-school students: their future lay in their own hands (although they could expect help from the Brigade in setting themselves up as farmers) and not in the hope of paid employment.

Morale among this first intake of trainees began to decline early in their third and final year and it deteriorated during much of the second half of 1969. In December of that year, dissatisfaction came to a head in a strike, following which several of the third-year trainees left, reducing their number to 14 from the 22 (of the original 40) who had survived up to that point. While I was at Serowe, I spoke to a number of the trainees in an effort to discover the nature of their grievances. Most said that it was the quality and content of their teaching that they had been complaining about but, while I would not discount this as a grievance, I am convinced that another and important cause of disaffection was uncertainty about the future. One or two of the trainees whom I met expressed enthusiasm about the idea of settlement and seemed to have a clear idea of what it involved but these were all from the second year. From my talks with the third-year boys, it was evident that they lacked the kind of motivation and understanding needed for such an arduous task as starting a co-operative farm. It is perhaps relevant to note at this point that the idea of the Farmers' Brigade came in the first instance from Swaneng Hill School and was inspired by the desire to solve a general problem: neither the local community nor the trainees themselves expressed any specific desire on their own account for agricultural training, still less for farm settlements.

My impression of a lack of adequate motivation was powerfully reinforced at Shashe River School, where I had the opportunity to talk to the Farmers' Brigade trainees both informally and at a formal question-and-answer session. These students were almost obsessively pre-occupied with the fact that they would not be receiving any kind of official certificate at the end of their course. One may argue that, if certificates are so important to them, then they should be awarded and in terms of morale in the short run there would seem to be a strong case for doing so. But I believe the desire for certificates is a symptom of something more deeply rooted, namely, the trainees' belief that the training they are getting is the same kind of thing as the secondary students or the members of the Builders' Brigade

are getting, albeit an inferior version of it. It is a commonplace that secondary education in a country like Botswana is generally regarded as a means of escape from the life of rural poverty and drudgery, and for most people that escape is inextricably linked with the idea of a paid job. Both Swaneng Hill and Shashe River have done everything possible to bring it home to all their students that the only ultimate escape from the ills of underdevelopment is through hard manual work. But whereas most of the students at these two schools would doubtless be ready to accept that as a generalisation, from the point of view of the individual the choice seems to be between making the grade into the modern sector with its jobs, its cash and its comforts or failing to make the grade and having to put up with the traditional poverty and discomfort of the rural subsistence economy. That is the great divide in Botswana today. The Farmers' Brigade trainees would like to see themselves as having made the grade onto the educational ladder that leads away from rural poverty, but part of the proof of having done so is the certificate at the end of the course. Hence the overriding importance of the certificate as a symbol.

My own view is that it would be hard to over-emphasise the importance of these psychological factors, not least because, if they could be changed and a corps of eager young farmers created, their very eagerness to get on with their own farming would be a powerful force in overcoming the other obstacles in the way of successful settlement. As it is, however, the trainees' lack of motivation and confusion about their own objectives only makes the task of overcoming these obstacles harder. All African countries in greater or lesser degree face the problem of inducing able young people to take up farming with enthusiasm, given the superior social attractions of modern urban life, and it can be argued that the problem cannot be solved without radical political action to alter the disequilibrium between the modern and the rural sectors of the economy. Under present conditions in Botswana, that looks like a counsel of despair, and one would be reluctant to accept it simply on the strength of the difficulties experienced by the Serowe Farmers' Brigade in these early years.

So far, in analysing these difficulties, I have dwelt mainly on the trainees' own state of mind, but we have to be clear that this is only one side of the picture. The following analysis has been offered by the Serowe Brigade itself.

"Present Serowe Farmers' Brigade trainees were recruited with the hope that some would set up a group co-operative farm after training. With the first group now near completion, this objective is very remote. Experience during 1969 in making post-training plans has laid bare the following weaknesses in the original SFB programme:

(*a*) The traditional attitudes towards land tenure and the revolutionary nature of the settlement proposals have, so far, meant that no land has yet been obtained for a group settlement. The Bamangwato Tribal Authorities had hoped that land for this purpose would be available, but it seems that, to go forward successfully, the scheme must have a consensus of local opinion actively supporting it. This does not yet exist.

(*b*) The early trainees bore the brunt of the development work of the Serowe farm, so that their conditions of work and training were, for a long time, rudimentary and their theory teaching given low priority. Combined with aspirations to escape subsistence farming, the fact that no certificate has ever been offered and that job opportunities, in any case, do not exist, some trainees had expected more than the programme was able to offer them. Here again, the frustration is really due to the failure of settlement plans and the lack of any post-training alternative in line with aspirations.

(c) Settlement following training would have been expensive: R300–R350 per settler to buy enough breeding animals and essential capital development to generate satisfactory income (say R10/month after 5 years, R20/month after 8–10 years). Profit from the Serowe farm will never be of a magnitude to pay for such a settlement. Contact with parents was minimal and took place at a very late stage; the evidence was that many were suspicious of being asked to contribute to their son's future just as the training was drawing to a close. Thus, it was clear that outside funds would have to be sought.

In short, the Serowe Farmers' Brigade, at the end of 1969, had realised certain major goals—the setting up of a primary-school-leaver farmer-training programme paying its own recurrent costs—but had failed to solve equally major problems, notably post-training".

New plans at Serowe

This analysis classifies the difficulties in three groups: local community attitudes (land tenure etc.); attitudes of trainees; and economic problems. The SFB has now come up with a new training and post-training plan to take account of them, which we shall call the *in situ* scheme. Clearly, under this scheme, the recruitment and pre-planning stage assumes a great deal more importance than under the old model. The SFB outlines the following steps: to make the proposals as well-known as possible locally, especially through *kgotla* (tribal) meetings; to make a definite offer of assistance, expertise, staff, and some money, material and stock, to any village or groups of villages which unequivocally allocates land for training and settlement, forms a committee to help the SFB implement the scheme, undertakes some capital work, such as land-clearing, fencing and building, and provides some breeding stock, cows, calves and goats; and to select villages for inclusion in the programme in consultation with the Ministry of Agriculture and other government departments, the district council and the tribal authorities. Once the villages have been selected in this way and the committees formed, trainees from them would be selected jointly by the SFB and the village committee. Both the trainees and their parents would have to understand the conditions of training; in particular it would need to be clearly understood that the training land would be automatically available for settlement if required after the course was completed.

If demand exists, new *in situ* farms can be started, the limit being set by the SFB's own ability to cope with simultaneous programmes at its headquarters. (Beyond that point, it would be necessary to create more "headquarters" farms, each surrounded by its own satellite system of *in situ* farms.)

The advantages claimed for this radically revised scheme are that it will retain the best features of the existing scheme, in that the facilities of the SFB central farm will be available to the trainees (more especially, the SFB farm is expected to generate enough surplus to meet many of the *in situ* costs) and it will be tackling the problem of rural development in Botswana from a more realistic angle, by paying more attention to post-training considerations and by involving the surrounding community more closely.

Farmers at Shashe River

I have devoted a good deal of attention to the experience of Serowe and the new plans that have been formulated there, because it seems clear that the success or failure of this Brigade is going to be crucial in determining the future of Farmers' Brigades in general. At present there are two other Farmers' Brigades in existence in the country. The one at Shashe River School is closely modelled on the original

Serowe pattern but is at a much less advanced stage of development. There are now 15 trainees there, who are all still in their first year. The farm has been hampered by a number of factors, notably shortage of capital and land and a lack of clear direction consequent on the failure of the settlement proposals at Serowe.

But obviously there can be no case for recruiting further trainees until the post-training situation has been clarified. It is one of the great merits of the new Serowe *in situ* plan that it contains a built-in safeguard against recruiting trainees who will have no acceptable future to look forward to after completion of their courses. The very starting of an *in situ* farm ensures that the conditions for an eventual independent settlement are already present.

Farmers at Mochudi

The third Farmers' Brigade now operating in Botswana, that at Mochudi, is based on rather different assumptions from the ones at Serowe and Shashi. It aims to provide a balanced training, both in animal husbandry and in crop farming, for a relatively small number of trainees who are expected to return to their family farms. The original proposal, for which Oxfam provided the finance, was "to train 20 young men in improved farming techniques in both crop husbandry and animal husbandry, with the possible settlement of trainees on land which was to be allocated to the Kgatleng Youth Development Association (KYDA) to the west of Artesia". Training activity began in November 1968 on some lands at Morwa, near Mochudi, which had been cleared for that purpose by the tribe some years before. There were seven trainees under the supervision of an extremely competent Mennonite volunteer, who is still in charge of the Mochudi farm training programme. Later an arrangement was made with Chief Linchwe of the Bakgatla on his departure as Botswana's ambassador in Washington, under which the Mochudi Brigade undertook to look after his cattle post at Nfetlédi, about 40 miles from Mochudi, in return for being allowed to use the land at the cattle post for training. Work at this second training site began in August 1969 and training is now being carried on at both the Morwa and the Nfetledi sites with about five trainees at each. Meanwhile, however, no progress has been made towards the allocation of the land west of Artesia, which was to be used both as a permanent training site on which the Brigade would build up its own beef ranch and later, possibly, as a settlement for ex-trainees. The reasons for this failure to make progress are probably much the same as the reasons for the similar failure to obtain settlement land at Serowe—principally social resistance in the tribal community to the unprecedented idea of allocating land to young people for co-operative farming, combined with resistance to the idea of fencing tribal land. (A contributory factor, at both places, may well be the changeover that is now taking place to the new Tribal Land Boards, which are now legally in charge of the allocation of land but are not yet in effective operation.)

The response of the KYDA Farmers' Brigade to this new situation has been in practice to abandon the idea of settlement, although it still remains as a theoretical possibility in the future. The Brigade now has a new plan to increase the number of its training sites from the present two to four, to shorten the training period away from home from three years to two, and to provide another year of semi-training at home, with the trainee helping to farm his family lands and receiving periodic visits from Brigade instructors. The new training sites to be taken into the programme would be the Masama Livestock Improvement Centre and an area of 1 000 acres of uncleared land at Malowane on the Marico/Limpopo.

I was unable to form any clear idea of the eventual finances of this Brigade: it is still at the stage where its accounts consist of little more than a list of expenditure.

Estimates of future income were unavailable and in any case would have little validity. But even without the extra expenditure envisaged in the new Programme (amounting to R1 870 net of extra capital, being R9 245 of additional spending, less a saving of R7 375 from not going ahead with the ranch originally proposed, plus an extra R4 000 a year in recurrent expenditure, mainly on higher staff and transport costs), it is not easy to see how the Mochudi Brigade could become self-financing, since it will not have the only reliable source of income in Botswana, namely, an established beef ranch.

So far as the existing operations of the Mochudi Brigade at Morwa and Nfetledi are concerned, there have been some teething troubles at Morwa, due to initial inexperience and later to inadequate supervision after the volunteer in charge had moved to Nfetledi, but I was highly impressed with the results at Nfetledi. The five trainees there are clearly receiving an excellent training; their morale is high, and there seems every prospect that they will be able to put what they have learned to use, once they return home. But it must be remembered that by Serowe standards the Mochudi programme is a relatively unambitious one, which may be able to produce a small number of good farmers but can hardly hope to make more than a modest contribution to rural development. It scores by being realistic and effective in its own terms; its drawbacks in the perspective of the larger problem are that it is unlikely to cover costs (which means that it cannot serve as a model for large-scale replication) and, because it aims to send trainees back to their own families, its recruiting policy must concentrate on boys from the wealthiest section of the community. In short, it is a well-conceived and well-executed exercise in agricultural training on a limited scale: as such it deserves every support, but it should not be regarded as a substitute for the Brigade, which aims at some form of settlement.

The future of Farmers' Brigades

We have now taken a brief look at the existing Farmers' Brigades in Botswana, their experience and their problems, and we have discussed some of the advantages and disadvantages of the various approaches being pursued. It remains to formulate the key questions about the future of these Brigades and to see if answers can be given.

(1) Ought Farmers' Brigades to aim at eventual post-training settlements or ought they to be content with preparing boys to return to their family farms, in the hope that they will do something to increase productivity there? Experience at Serowe, as we have seen, has thrown the difficulties of organising post-training settlements under existing social conditions into sharp relief. But I am convinced that it would be wrong to conclude that the problem is insoluble. It has to be recognised that in Botswana's climatic conditions, the only type of farming operation that makes economic sense is one that is based on beef. Trainees may be taught to increase crop productivity, but that, though desirable, is not enough.

Various conclusions follow from this. The first is that any worthwhile training programme must include, as an important constituent, the teaching of improved animal-husbandry practices. The second is that the approach which aims to return trainees as individuals to their families can only hope to make into viable farmers those whose families already possess the necessary minimum number of cattle (about 50) to mount an economic beef operation. This is because it would be almost impossibly difficult for an individual Farmers' Brigade graduate without capital of his own to raise the necessary capital for that minimum herd. The latest statistics for the distribution of cattle are highly relevant here. They are reproduced as a table at the end of this report. What they show in the Bamangwato region (No.

2 in the table), for example, is that 35 per cent of the total agricultural holders do not own any cattle at all, 24 per cent own between one and 10 head, and another 16 per cent between 11 and 25 head. In other words, 75 per cent of the farming families in this district own less than 25 head of cattle, which is well below the minimum at which one can think in terms of mounting a commercial beef operation and becoming independent of arable farming. Two things need to be said about these bleak facts of economic inequality. The first is that any farming training programme which does not aim at a co-operative type of settlement can only reach the top 25 per cent of the population at the very outside. The second is that, as both logic and experience suggest, it is precisely the bottom 75 per cent who are likely to be most interested in joining a Farmers' Brigade. These considerations alone seem to me to indicate that to abandon the idea of settlement is to concede that Farmers' Brigades, and indeed the Brigade movement as a whole, can only make a marginal contribution to the problem of school-leavers or of rural development. I therefore conclude, and I regard this as the most important conclusion I have to offer, that the main thrust of the Brigade movement must be towards solving the problems of settlement.

(2) Given that settlement is desirable, how can the obstacles in the way of achieving it be overcome? There is no easy answer to this question, and it may be that these obstacles are indeed insurmountable under present conditions. If that proves to be the case, those concerned with Brigades will have to accept that they can only perform a modest function, while the Government and people of Botswana will have to accept that the development of their country can only proceed very slowly, until traditional attitudes are modified. But the possibility that the problem cannot be solved is not a reason for not trying to solve it. The new Serowe approach offers the best hope currently available.

What exactly are these obstacles? We have already discussed the lack of adequate motivation among the trainees and their wish for the closest possible approximation to a secondary schooling complete with certificates. Given the status that accrues in countries like Botswana to white-collar workers and the huge disparity in living standards between the modern and the traditional sectors of the economy, it is unlikely that this difficulty can be made to disappear. In the long run it can only be solved when the rural population have acquired both a determination to achieve higher living standards and an understanding that they can only be achieved by co-operative hard work and self-reliance. Courses like the one in Development Studies that has been devised at the Swaneng Hill and Shashe River Schools can do something towards these ends in the case of trainees who have already been recruited into brigades, and education along these lines should continue to be an important part of the academic side of Brigade teaching. But a number of other practical steps, many of them incorporated in the new Serowe programme, can be taken to improve the level of motivation among the brigade trainees. They include the following:

(*a*) A higher age at entry for at least some trainees in every Farmers' Brigade. It is unreasonable to expect a 14- or 15-year-old, particularly one who has probably tried to get into a secondary school and failed, to become an effective and self-reliant farmer after three years of training: he may have acquired the technical skills, but he is still a very young man in a society where youth is expected to play a subservient role. To put it at its lowest, a boy of that age is unlikely to put up strong resistance to the social pressures against co-operative settlement: even if he believes this to be the best future for him personally, he may well let his case go by default. The new Serowe plan puts 18 as the minimum age for recruitment to the Farmers' Brigade and this seems sensible. But it still poses a problem, which is

what the potential Brigade recruit will do between leaving primary school and joining the Brigade. The Brigade movement has made representations to the Ministry of Education in favour of retaining (or reverting to) eight years of age as the minimum for entry to primary schools, instead of the six to which it is being steadily reduced. The Ministry has so far rejected these, mainly, it seems, because most secondary-school headmasters prefer six as the primary-school entry age. I am not in a position to judge between the requirements of the secondary schools and those of the Brigades (although I was not impressed by the arguments I read and heard in favour of the earlier age). But I would say two things: first, that the leaders of the Brigade movement, as the only people in the country who are trying to do something specifically for the primary-school leaver who will not get into a secondary school, have as much right to be heard on this matter as the representatives of the secondary schools; and second, that, since the higher entry age is very much more appropriate for those who will eventually receive a Brigade training, the Brigade movement should continue to press the Government to raise the age. It seems wrong in principle that all decisions relating to primary education should be taken with reference to the needs of the secondary schools, since the great majority of those who go to primary school will not have the chance to get a secondary-school place.

(*b*) Much greater involvement on the part of the parents of potential Brigade recruits. So far, as the Brigade leaders themselves would admit, contact between Brigades and parents has been minimal. I have no means of telling how good the average parent's understanding may be of what a Brigade training offers his child, but I suspect that it may be very poor. On the other hand, his influence on the child is likely to be great. Every effort must be made to inform the parents of Brigade students about Brigades, what they are and the kind of future they offer. Some form of "parent–teacher association" should be set up at each Brigade centre and should hold regular meetings, so that the parents can keep abreast of what the Brigades are doing and what sort of future their children are being prepared for.

(*c*) Some form of material commitment on the part of the families of Farmers' Brigade trainees. This is an important element of the new Serowe plan and it has two obvious attractions: it reduces the proportion of capital costs of the *in situ* programme that have to be found outside, and it increases the commitment of the families to the success of that programme. But there is one serious objection to it: the great inequality in the ability of different families to contribute. It has been suggested that families who cannot afford to contribute, say, cattle should be allowed to contribute their labour towards the initial capital work (land-clearing, fencing, etc.) instead. This seems to me invidious, since it would create two classes of trainees: those who had to do back-breaking work, and those who could afford to chip in, say, two cows and then sit back. All I can suggest is that the general principle should be established that families must make a contribution in relation to their means and that some form of rough-and-ready means test should be devised. The danger here is that the wealthier families may be reluctant to subsidise the poorer ones. If that does turn out to be a serious difficulty in practice, it may be necessary to revert to the acceptance of labour as a substitute for capital, invidious though it is. The need is to reconcile two indispensable principles that tend to conflict with each other: the importance of a material contribution as a pledge of commitment, and the importance of ensuring that the Brigade programme is open to all, irrespective of their families' wealth.

(*d*) More propaganda on behalf of Brigades in the primary schools. The need is to make more primary-school children aware that, in areas where Brigades exist,

the alternatives when they leave are not simply a secondary school or nothing: Brigades offer a worthwhile training, which is not just an inferior version of an academic secondary education.

(*e*) More Government action to enhance the prestige of Brigades. I shall have more to say later about various forms of concrete help which the Government can give to the Brigade movement. Since we are now talking about how to improve the motivation of trainees, what is needed is as frequent and unequivocal evidence as possible that the Government really does support and endorse Brigades. This is mainly a matter of ministerial speeches and visits. The more often ministers say they approve of Brigades and show that they do so by visiting them, the more likely is it that young people will accept them as valid and prestigious institutions. In terms of allocation of time, it would be reasonable for ministers to discriminate in favour of Brigades: the prestige of secondary schools is such that the Brigades have a great deal of leeway to make up.

So much for motivation, as a problem in the way of settlement. The next obstacle is possibly even more serious: the complex of traditional and social barriers against the kind of change implied by co-operative settlement. These include a prejudice against allocating land to non-family groups, a prejudice against allocating land to young people, who under traditional custom have to wait for it, assuming a slowly growing economic responsibility as they pass various landmarks, such as marriage and the death of their fathers; a prejudice against the fencing of tribal land (and fencing is, of course, a prerequisite for a commercial beef enterprise). I am not qualified to understand the precise nature of these traditional prejudices or to assess their tenacity, but it seems to me that, unless we assume the possibility of modifying at least some of them, we will have to concede that the possibility of worthwhile rural development is a mirage.

Here again the long-term answer lies in the encouragement of more ambitious expectations, combined with an education in the economic realities. But in this case it seems clear that the Government could, if it wished, do more to promote social change. One can understand the reluctance of democratic leaders, themselves deriving much of their prestige in many cases from their position in the traditional community, to force radical social change on an unwilling population. One can also give the Government credit for the measures it has taken, such as the creation of the new Tribal Land Boards. But we have to be clear that in the context of Brigades what has been done so far is not enough. The point here is that, if the Government at the highest level had been known to support the project, that might well have been decisive. The fact that (so far as I am aware) the Government has done nothing to make the project more acceptable to the local community means in practice that it has not had a fair chance.

This brings me to the second key conclusion in this report. The Government must make up its mind on the settlement issue and, if it believes that settlement ought to be given a trial, it must do much more to make sure that it *is* given a trial. The Department of Agriculture's policy, in effect, is to provide support for Farmers' Brigades in principle, but to watch settlement schemes with a cautious, if not actively suspicious eye: it would clearly prefer these Brigades to concentrate on returning trainees to their own areas to act as "individuals of change". Attitudes towards settlement among civil servants concerned with agricultural policy vary greatly, but in the talks I had with them I frequently heard remarks like "the Serowe Farmers' Brigade must realise it is on probation and, if it fails, the outlook for settlements will be very poor". Although this kind of approach may seem to be impartial, in practice it loads the dice against settlement. I regard active government support as an indispensable condition for

successful settlement. This support may take many forms. It should certainly include the following: (*a*) unequivocal support from the Cabinet at tribal *kgotla* meetings and district-council meetings; (*b*) a clear commitment from the Government to help in raising the capital required for a settlement scheme (this help might appropriately take the form of a government guarantee in support of a loan application to the National Development Bank); (*c*) active government involvement in the preliminary consultations with the local community that are needed before an *in situ* scheme can go ahead.

Since I regard this question of settlement and of official policy towards it as crucial, I would like to summarise my arguments about it at this point. Given the shortage of job opportunities and the limited rate of growth in prospect for the modern sector, the "school-leaver problem" cannot be separated from the wider problems of rural development and a breakthrough in farm productivity. Since the Brigade movement aims to make a substantial contribution to the school-leaver problem and not just to provide a rough-and-ready form of training for the small modern sector, the movement must tackle these wider problems. That means training young people to be more productive farmers. But simply training them to return to their family farms, as experience throughout the developing world has shown, is not enough, unless we are prepared to take a very modest view of what is possible. Therefore Brigades must aim at developing a viable model of settlement that can be replicated on as wide a scale as possible. Experience at Serowe has shown some of the difficulties in doing so, and a new plan now exists on paper there for overcoming at least the most obvious of these. Although this plan will no doubt need further modification in the light of new experience, it offers the best hope now in sight. If the Government accepts the logic of the argument so far, it must change its attitude to the Serowe project from one of cautious toleration to one of active and enthusiastic support (if only because the notion of settlement can only be shown to be impracticable after everything possible has been tried to make it succeed). One such successful project would give an incalculable stimulus to similar efforts in other areas.

(3) What is the most appropriate economic shape for a Farmers' Brigade and for a subsequent settlement scheme, if any? It would be foolish to lay down a firm blueprint in an area where flexibility is all-important, but a number of points seem worth bearing in mind. The original Brigade principle of covering all costs (except those of expatriate staff, whose salaries it is reasonable to ask outside agencies to finance) still holds good. The only sure method of doing so in the case of a farming operation is to have a large-scale beef ranch. This implies a heavy capital outlay (see below for the figures at the existing Serowe farm). But since what we are interested in is the shape of a Farmers' Brigade that may be capable of replication on a large scale, it is better to envisage an operation requiring a relatively large capital investment, which can then pay its way, than a smaller initial outlay which requires recurrent subsidies. The cardinal point is that, if the Farmers' Brigade approach shows that it can make a really substantial contribution to rural development and to the problem of primary-school leavers, it will be feasible to approach an outside aid agency with a request for a lot of capital, whereas recurrent subsidies would almost certainly have to come out of the government budget. It may be argued that the combination of a large beef ranch and a general farm training establishment is illogical, since the profits of the ranch do not stem in any real sense from the productive work of the trainees. Nevertheless I am sure that there is a reasonable prospect of "selling" a project consisting of a number of such combinations to an outside agency (always provided that the outstanding problems, such as post-training, can be solved).

The Serowe figures for capital investment in the farm are worth analysis with regard to the possible establishment of comparable operations elsewhere. Total capital expenditure on the farm to the end of 1970 will be about R113 000, to which must be added a total "loss" (which includes working capital) of R17 000 and the equivalent of a R6 000 loan from the Botswana Meat Commission in the form of stock under the grazier scheme. While I was at Serowe, I discussed these figures with the manager, Mr. Vernon Gibberd, and others. I attach a breakdown of the capital expenditure, together with the reductions which it seems reasonable to think could be made in the light of experience, were a comparable project to be tackled again.

Item	Expenditure (rands)	Possible cuts (rands)
Buildings		
Senior expatriate housing	8 000	2 000
Cow house	3 400	2 000
Dairy	2 300	(+200)
Poultry houses	2 000	800
Dormitory	3 500	1 000
Office rondavel	250	–
Instructors' rondavels	250	–
Retail outlet in Serowe	1 200	1 200
Classroom	1 000	–
Miscellaneous on buildings	1 000	–
Total (buildings)	22 900	6 800
Beef ranch (multi-camp, short-cycle, intensive rotational grazing on the "Savory" system with two boreholes):		
Already spent	10 000	–
To come	4 000	–
Total (beef ranch) (exc. livestock)	14 000	–
Livestock		
Dairy cows and bull	14 000	–
Beef cattle and oxen	26 800	–
Imported goats	1 700	–
Local goats	1 600	–
Draught horses and mules	1 000	–
Total (livestock)	45 100	–
Plant		
Boreholes and borehole plant	8 000	4 000

Item	Expenditure (rands)	Possible cuts (rands)
Power generator	750	–
Hand tools	500	–
Total (plant)	9 250	4 000
Tractor and dairy		
Tractor and implements	4 200	–
Dairy equipment and refrigeration	4 900	–
Total (tractor and dairy)	9 100	–
Farm fencing	3 300	300
Miscellaneous	8 800	800
"Indirect capital"	1 900	–
Grand total	114 350	11 900
Loss and working capital	17 000	?

In round figures, the R114 000 that has been invested might be reduced to perhaps R100 000, while another R25 000 could be saved if the dairy were excluded. Allowing, say, R10 000 for initial losses and working capital, which appears reasonable because of Serowe's bad initial experience and because of the delay in establishing the beef herd, one can say that it would take about R75 000 in initial capital expenditure, plus R10 000 for initial losses and working capital, plus R6 000 as a stock loan from the BMC, to set up a new project equivalent to the one at Serowe without the dairy. It should be noted that something like R27 000 of this would go on beef cattle and oxen, so that any livestock that could be mobilised free from internal sources would reduce the capital requirement from outside.

Builders' Brigades

I have dealt with the problems of Farmers' Brigades at considerable length because of their special difficulty and the special importance of solving them. Builders' Brigades present fewer problems. The main difference between the builders and the farmers is that the broad lines on which a Builders' Brigade can be successfully run are already known. There is now enough evidence to be reasonably confident that, provided certain conditions are observed, a properly run Builders' Brigade can provide an adequate training for employment and cover by its own productive work all the costs of doing so, except the cost of expatriate supervision.

There are at present five Builders' Brigades operating in Botswana: at Serowe, at Shashi River, at Lobatsi, at Kanye and at Mochudi. I would have liked to be able to present a thorough comparative financial assessment of all these Brigades. But, unfortunately, I am not in a position to do so, since, although I visited them all, I was unable to get satisfactory financial information from two of them (Kanye and Mochudi). Despite this gap in my information, however, I feel the existence of this relatively large body of experience provides a basis for some worth-while conclusions about future policy in relation to Builders' Brigades.

Builders at Serowe

The first brigade of all was the Builders' Brigade at Swaneng Hill, which was started in 1965 and has now been in existence for about five years. It has therefore turned out three successive batches of graduates, who have completed their three years' training. It now has 105 trainees, of whom 70 are bricklayers and 35 carpenters. In the four years 1966 to 1969, it completed a total of R80 000 worth of work, the year with the biggest turnover having been 1968, with R30 000 worth, and that with the smallest 1966, with R3 000 worth. Of this total volume of business, about R24 000 was done for Swaneng Hill School and the balance of R56 000 for outside customers. The brigade has received a total grant of R4 923 from the Serowe Youth Development Association, of which R4 500 has been spent on the necessary capital formation (R3 000 for two trainee dormitories, R800 for a carpenter's shelter and equipment, R700 for tools and R500 for a timber-treatment dip tank and cement shed). The balance of R423 represents the total loss made by the Brigade on its building operations since it started. Effectively, therefore, one can say that the Brigade has broken even.

So far as its recurrent expenses are concerned, the Brigade spent a total of R14 359 in 1969, broken down as follows:

Trainee expenses (rands)		*Business expenses (rands)*	
Food expenses	3 039	Administration expenses	316
Salaries of instructors	7 232	Workshop charges	253
Transport of students	1 221	Transport of material	800
Building and equipment	128	Suppliers' expenses	99
Tools for trainees	401	Tools for brigade	289
Textbooks	80	Total	1 757
Academic teaching	301		
Total	12 602	Total expenses (rands)	14 359

These expenses average out at R326 a week (for an 11-month year). This is the equivalent of R3.30 per trainee per week or 66c per trainee per day for a five-day week. Because of the demands of teaching, the trainees only spend four days a week on the job, so that expenses work out at 95c per trainee per day actually worked. In estimating for jobs, the Brigade charges 74c a day (on the basis of a fiveday week). This appears to give it a small margin of profit on labour, namely, the difference between 66c and 74c, but it is easy to see that the Brigade needs to be working virtually the whole time if it is to cover costs. The only expenses not allowed for in the above figures are the salaries of expatriate volunteer organisers and a part-time, expatriate, volunteer architect and a small amount for secretarial services: these are all provided either by Swaneng Hill School or the Government. They would amount to another 9c per trainee per day.

From my own observations of the Serowe Builders' Brigade, I would like to record a few impressions. Morale in the Brigade at the time of my visit was not very good and there were problems in the field of discipline and quality of control. It seems clear that one important cause of these problems has been a lack of continuity at the level of administration. A large number of different members of the staff at Swaneng Hill School have been connected with the Brigade during its period of existence and their ability and technical experience seem to have varied rather widely. Active steps of various kinds, including the allocation of extra staff, were being taken to put this right while I was there, and it may well be that by

now the position has greatly improved. But the history of the Brigade seems to suggest strongly that Brigades are only as good as their organisers, who at Botswana's present stage of development are likely to be expatriates.

Another cause of less than optimum performance at Serowe, as at most of the other Builders' Brigades, is the inadequate quality of some of the local instructors. This is a deep-seated problem with its roots in the country's general lack of development and the fact that technically qualified and able Batswana can command higher salaries in government service or the private sector than the Brigades can afford. But I am sure that the Brigade movement, if it is to develop healthily, needs to give more thought to ways of recruiting instructors, possibly by means of a Brigade instructors' training centre. I shall have more to say about this later.

Another problem raised by the Serowe experience is that of taking the plunge from the protected business environment provided by a secondary school that needs building work done and will give it automatically to the Brigade attached to the school. The Serowe Brigade is obviously finding life a great deal tougher now that it has to compete for most of its work in the outside market. The only Builders' Brigade I saw in Botswana that seemed clearly capable of holding its own in an unsheltered market was the one at Lobatsi, which has never had the protection of a parent institution. Here again the moral is to regard the Brigade from the start as an institution that has to be able to succeed commercially in much the same way as a smallish jobbing building firm.

A feature of the history of the Serowe Brigade that calls for comment is the record of its trainees in the Government trade tests that they take at the end of their course. There seems to be general agreement that the system of trade tests, as it stands, is unsatisfactory, the main complaint being that its function is to determine a man's place in the Government's salary structure rather than his fitness for particular types of employment. No doubt the UNDP/ILO Industrial Vocational Training Project now getting under way will be able to devise a more appropriate system of testing. But, for the time being, the existing tests are the only yardstick by which one can judge how effective the training in the Builders' Brigades has been.

In the first year, 19 out of 21 passed and obtained their Class II certificates, in the second year, about half, and in the third and most recent year, only six out of 23 bricklayers passed and three out of eight carpenters. I have no means of assessing the exact causes of this apparent decline in standards, and from a practical point of view the possession of a government trade certificate seems to make no difference when it comes to getting a job on a building site. At the time I was in Serowe, 23 out of the 31 bricklayers and carpenters who had graduated the previous year were known to have obtained jobs at the diamond mine in Orapa, irrespective of their possession or otherwise of a certificate, and they were all on the same rate of pay, namely, 23 c an hour.

Builders at Lobatsi

This discussion of the Serowe Builders' Brigade has thrown up some problems that are peculiar to it and some that affect all Builders' Brigades. The experience of the second oldest Builders' Brigade, that at Lobatsi, has been different in certain important respects and these now need to be examined. The Brigade started in April 1967 with grants from the Community Development Department and the Botswana Christian Council totalling R7 000; a little later it got a grant of R3 000 from the US Ambassador's discretionary fund. The first enrolment of students was 15, of whom 12 completed their courses at the beginning of 1970, nine of these passing their Class II trade tests. All 12 found jobs at the diamond mine at Orapa at a

wage of 23 c an hour and nine were still there while I was in Botswana, the other three having disliked the conditions and left. At present there are 50 students, of whom 15 are in their third year, 17 in their second and 18 in their first

The main respects in which the Lobatsi Brigade differs from the one at Serowe are that is was sponsored by the Government (and still enjoys financial support, including a recurrent subsidy from the Community Development Department), that it is not attached to a secondary school, and that its relations with the local council (the Lobatsi Town Council) are much closer. It defines its goals as follows: (*a*) educating young Batswana as qualified builders, (*b*) helping to reduce unemployment and helping to minimise a potential youth problem in Botswana, and (*c*) providing the local community with economic construction. It will be noted that there is no mention here of covering costs, so that in that important respect it departs from standard Brigade principles. Among the motives for the inception of the Brigade, there seems to have been an element of "wanting to keep the youth off the streets" which was not present in the original Brigade conception.

My main conclusions about the Lobatsi Brigade are that as a construction unit it has become remarkably efficient (within certain limits dictated by factors outside its own control) but that its financial arrangements are unsuitable for a Brigade. When it began, the Brigade received five acres of land with the help of the Town Council and the initial group of trainees lived in tents on this site and constructed their own dormitory and other facilities. About a year later they undertook their first contract. By April 1970 the Brigade had completed 20 895 square feet of construction worth R37 000, of which over R25 000 represented outside contracts. The type of building done ranged from rondavels through classrooms to a three-bedroomed house for the Co-operative Development Trust at Gaborone. (Work on this last, the most ambitious project undertaken by the Brigade, was in progress while I was in Gaborone and appeared to be attaining an encouragingly high standard.) The Brigade consistently underbids local contractors, but its small size means that it cannot take on all the work it would like because it would take too long to do. Recently, for example, it was the lowest bidder for 80 low-cost houses in Lobatsi but was only given five of them. Morale among the trainees appears to be high and the Brigade enjoys the confidence of the local community.

On the financial side, the Brigade covers only 60 per cent of its recurrent costs, the balance being provided by the Community Development Department and the US Peace Corps. Expenses per trainee per month are as follows:

Covered by earnings	Rands
Food	5.00
Cooks' salaries	0.68
Night-school teacher's salary	0.30
Sports fund	0.50
Tool depreciation	0.64
Personal-tool fund	0.90
Protective-clothing fund	0.75
Educational expenses (classroom)	0.37
Administration expenses	0.18
Staff-salary supplement (portion covered by the Brigade)	1.31
Miscellaneous	0.35
Unpredictable (delays)	1.00
Total	11.98
Total brought forward	11.98

Received from Peace Corps	
Salary of technical assistant	1.30
Salary of building instructor	1.30
Total	2.60
Received from Community Development Department	
Salary of project co-ordinator (local)	0.90
Salary of building instructor	1.30
Salary of 2 drivers	1.08
Maintenance (2 lorries)	0.55
Fuel for lorries	0.30
Telephone	0.23
Water	0.04
Total	4.40
Total expenses per trainee per month	18.98

At present the Brigade charges 71 c per day actually worked for labour, which on the basis of 17 working days a month (four days a week, the fifth being spent in classroom instruction) covers the R11.98 per trainee per month in the first part of the table above. The Brigade principle allows for the salaries of expatriates to come from outside, so the only anomalous element is the R4.40 a month or 26 c per working day per trainee which comes from the Community Development Department. If this were eliminated, the Brigade would have to charge 97 c per day, assuming unchanged productivity. It is not clear whether it would still be competitive at that price, but the charge does not compare very unfavourably with that at Serowe, which is 74 c per day on the basis of a five-day week or the equivalent of 92 c per day actually worked.

In my view, there is a strong case for removing the Community Development Department subsidy, for the following reasons. The need to cover costs is a powerful incentive to efficiency: if the subsidy is there, it will be used, since there is no pressure on the Brigade to generate a surplus. But the main argument for not subsidising Brigades is the original one: unless they can cover their costs, or at least those portions of them which cannot be obtained from outside the country, the chances of establishing more than a token number of Brigades are virtually non-existent. If the Lobatsi Brigade cannot survive without subsidy in open competition, efficient as it obviously is, then the prospects of other Brigades doing so would be poor. But I believe that it can and that it should be given the chance to prove it and thus show the way to others. It seems wrong that the country's most technically efficient Brigade should still be operating on a recurrent subsidy which it probably does not need.

Two other points need to be made about the Lobatsi Brigade. One is the value of its good relations with the Town Council and the local community in general. For a Brigade which is not attached to a "parent" institution like a secondary school, this seems indispensable. The Lobatsi Brigade has obtained about 70 per cent in value of its outside contracts from the Council and it is only this which has enabled it to have a continuous flow of work. There is a strong local Board of Trustees, which appears to have given the Brigade the right kind of encouragement and support. The story of the unsuccessful Builders' Brigade at Francistown, one of the reasons for the failure of which was lack of support from the local council, provides further evidence of the need for this support.

Other Builders' Brigades

The Builders' Brigade at Shashe River School has been set up very much on the same lines as the one at Serowe, although it is even more closely integrated with the School. It now has three groups of trainees totalling 53, of which the first two (of 21 and 15 respectively) have been there for more than a year, while the third (of 17) was taken in in February this year. So far, all the work of the Brigade has been done for the School. In addition, there is a (separate) Carpenters' Brigade with an enrolment of 30 divided into two groups. Apart from carrying out the carpentry element in the building programme, these carpenters have now successfully tendered for some furniture contracts offered by district councils and completed them.

These Shashe Brigades are still too new for many general conclusions to be drawn from their experience. The test of whether they can succeed as commercial enterprises will come fairly shortly, when the school-building programme tapers off. I was personally impressed by the high morale of the Brigades, which can probably

be attributed partly to the general good spirit in this new School and partly to the efforts of the staff concerned with Brigades. But probably their most notable feature is the very close attention that they have given to costs and production norms. Unlike all other brigades, the Shashe River builders have a clear idea of the value added per man-hour in the various building operations they undertake, and this will be a great advantage when it comes to tendering and maintaining productivity on outside contracts. I strongly recommend that all the Builders' Brigades should get hold of the figures that have been worked out at Shashe River and test their own performance against them.

So far as actual maintenance and instruction costs for the Shashe River trainees are concerned, the following figures may be of interest. Instructors are paid R65 a month each and there are three of them for the 53 students. Food costs 60 c per student per week (a considerable saving on the Lobatsi figure of R5 per month). Overalls costing R3 each are issued to the trainees and last about nine months: say, R4 a year per trainee for overalls. Each trainee has received a copy of one book costing R1 (*Teach Yourself Bricklaying*). Accommodation in rondavels, when available, will cost R10 per student per year. Expatriate supervision (a portion of the time of two members of the School staff) works out at R1 850 a year or R150 a month; the Brigade will not be expected to cover this cost.

I am not in a position to say so much about the other two Builders' Brigades, at Kanye and Mochudi. The volunteers in charge of both showed an attractive degree of enthusiasm. The Mochudi Brigade has put up some buildings which seem of reasonable quality, but it has attracted some criticism from customers on the grounds of excessive slowness. It suffers from a shortage of working capital, which renders it vulnerable to suppliers who are not prepared to give it credit, thus raising the cost of materials (which have to be ordered in small quantities) and lengthening delivery dates. It could therefore use a fresh injection of cash, but I would be happier if it showed a greater awareness of the need to keep adequate financial records. The lack of these encourages the uncharitable suspicion that the Brigade is not as interested in the tedious and niggling subject of costs and money as it should be. The Brigade, despite my requests, did not supply me with any figures about its operations.

The standard of building work at Kanye so far seems rather modest, but the Brigade is still in its early days, with its first intake of 16 trainees (out of the original 20). Like the Lobatsi Brigade, the one at Kanye has the backing of the Community Development Department and enjoys a financial subsidy from it, which, so far as recurrent costs are concerned, includes running costs on a truck (petrol, driver's salary, maintenance and depreciation), office expenses, and the salary of a local staff member. There will also soon be an Assistant Community Development Officer, whose salary will be paid by the Department. In addition, there are two Peace Corps volunteers, whose salaries are paid by the US Government; the Builders' Brigade only takes up a fraction of their time. I was informed by the volunteer in charge that the Brigade was probably covering all its costs, except his own salary, which would be in accordance with Brigade principles. If that is true, then the arguments already advanced in the case of the Lobatsi Brigade for withdrawing the Community Development subsidy hold good for Kanye as well. At Kanye, as at Lobatsi, the problem of future relations between the Brigade and the Community Development Department is one that still needs to be settled. I shall have something to say about this when I discuss relations between the Government and the Brigades as a whole. One final point about the Kanye Builders' Brigade is that it charges R1.05 a day for labour and appears to be able to get contracts on that basis; this is substantially higher than the charge made by either Serowe or Lobatsi.

The future of Builders' Brigades

So much for a description of the individual Builders' Brigades and some of their problems. The following general points seem valid about Builders' Brigades from the point of view of their future development.

(1) A Builders' Brigade requires relatively little capital to start: no more than hand tools, wheelbarrows and scaffolding as a minimum, which should not amount to more than R50 per trainee. More expensive labour-saving machinery, such as concrete mixers (the Kanye Brigade has one), should be avoided. But a Brigade which needs to compete in the open market from an early date must not be undercapitalised.

My own feeling is that it is better to err on the side of giving a Brigade rather too much working capital (which would amount to a small sum in total) than to weaken it and possibly force it to rely on recurrent subsidies by giving it too little.

(2) Given that capital is not an impossible constraint, the main limiting factors on the creation of future Brigades are the availability of productive work in the area and the likelihood of jobs for the trainees when they complete their training. Experience at Serowe and Shashi River demonstrates the value of Builders' Brigades attached to secondary schools; that at Lobatsi shows that a Brigade not so attached can succeed in one of Botswana's larger towns, where management is efficient and there is good contact with the local council. (It seems too early to give a verdict on the value of the Brigades at Mochudi and Kanye) It is important to realise that, because of the smaller amount of capital they require. Builders' Brigades, unlike Farmers' Brigades, do not have to be regarded as necessarily permanent institutions.

Finally, we must try to see Builders' Brigades and their future development in a national perspective. Whatever the original intentions of the "Founding Fathers" of the Brigade movement, Builders' Brigades trainees now think of themselves as future workers in the modern sector, either with one of the private construction firms or with the PWD. The present training programme cannot prepare trainees to form construction co-operatives, because it cannot give them the necessary commercial or technical knowledge. Nor, for the same reasons, can it prepare them to become small independent builders. If it is desired to do either of these things, the programme would need to be radically revised: the age of entrants would probably have to be raised, the course lengthened and the curriculum greatly diversified. For the moment, however, Builders' Brigades must think of themselves as preparing the students to get paid jobs as bricklayers or carpenters. This raises two questions. (*a*) Is the present training programme adequate for this purpose? (*b*) Is the total number of Brigade graduates that are being turned out every year in line with national manpower requirements? The answer to (*a*) seems to be that the present aim of training students for a Class II trade-test certificate is the most sensible one in the absence of a more suitable test, and that a well-run brigade ought to be able to get the great majority of its students through that test. Where that is not the case, there is probably something wrong either with the management or with the quality of the instructors which requires attention.

Question (*b*) is not so easy. The only projections of likely demand for skilled workers in the construction industry are those made in a recent paper by Mr J. White, of the Ministry of Development Planning. He has taken the number of skilled workers in particular trades known to be associated with a given value of construction output, assumed the same ratio for the whole construction sector of the gross domestic product, and calculated the increase in demand for these skills on various assumptions about the growth of g.d.p. and the construction industry's

share of it. He concludes that the additional number of bricklayers (who may have totalled 202 in 1969–70) that will be required each year in the immediate future may be between 30 and 38, and of carpenters (a possible 186 in 1969–70) between 32 and 35. On the face of it, these figures suggest that the Brigades, as they stand, are capable of meeting the extra demand for bricklayers and that another Carpenters' Brigade would take care of them. Although I am not in a position to produce an estimate different to Mr. White's, I would be reluctant to accept this conclusion before a good deal of further research has been done. In particular I would want to know (1) what proportion of the existing labour force in these trades is made up of non-Batswana and what the Government thinks about the idea of replacing these with Batswana; and (2) whether the assumptions about the growth of the construction industry are not too conservative? I recommend, therefore, that further study should be given to future demand for skilled building labour, starting, if possible, with projections of likely investment in construction rather than with global assumptions about growth in g.d.p. and about the industry's share of it. Until more reliable projections are available, I do not feel that much weight should be given to the hypothetical danger of "over-training".

Textile Workers

The Serowe Textile Workshop was set up in the middle of 1967, concurrently with the Farmers' Brigade, to provide a 2-year training for girls in spinning, weaving and dressmaking. It was followed by a similar workshop at Shashe River early in 1969. The organisers of both hoped that at least some of their students would choose to set up in business on co-operative lines after completing their training, and a few of the first weavers to graduate from the Serowe workshop have in fact formed themselves into such a group, which they call the Unity Workshop. The first dressmakers to complete their training showed less enthusiasm for this option and have preferred to go off in search of paid jobs which do not seem to exist. Meanwhile, the printing of cotton fabrics has been added to the list of activities at Serowe, while Shashe River turns out its own tie-and-dye fabric, which it makes up into dresses, skirts and hats.

Both establishments are a pleasure to visit. The standard of the work, particularly the woven goods (rugs at Serowe, handbags at Shashe River), the prints and the tie-and-dye, is excellent. Both are fortunate to have staff of outstanding calibre and devotion; both are able to make ends meet and to market nearly all of what they currently produce. On the technical side, there seems some room for improvement in the content of the dressmaking programme at Serowe, where a more creative and less mechanically repetitive approach seems called for. This apart, I have no criticisms and would be happy to see several similar workshops, although I am not able to assess how much production the potential market can absorb. The only real problem, marketing apart, is that of the trainees' future. Great care has been taken at Serowe to nurture the Unity Workshop in its first year of "partial independence" from the parent textile workshop and this seems to be paying off, but I was struck at Shashe River by the desire of the trainees for "certificates", which seems to indicate—as in the case of the farmers—a desire for paid jobs with little understanding of why such a desire is unrealistic, at least for weavers.

On the financial side, the total amount of capital invested in buildings and equipment at Serowe to date is R16,500. The target enrolment is 120 trainees (compared with the 55 who were there in 1969) and on this basis the capital costs per trainee would be R138—considerably above that required for builders but well below that for farmers on the Serowe pattern. However, there seems to be a rather high rate of drop-out and this would have to be taken into account when assessing the

costs and benefits of a textile workshop. It may be unrealistic to think in terms of a "permanent" enrolment of 120. Assuming an average of 80 at any one time, capital costs would be just over R200 a head. At Shashe River, where very strict control has been kept on costs, the workshop building and equipment (all hand-powered for spinning and weaving, with some electric sewing machines) has cost some R3 500–R4 000 for 30–40 students or perhaps rather over R100 per student, with another R60 a head for accommodation in rondavels.

So far as recurrent income and expenditure are concerned, the Serowe Brigade made a small loss for some time (I did not get the exact figure). Between April and December 1969, when the enrolment was 55 trainees, recurrent expenditure was R6 095 (excluding expatriate salaries) and this was more than covered by income of R6 579. For an enrolment of 120 trainees, it is estimated that recurrent costs, excluding materials, would be rather over R1 000 per month. If the girls are divided into groups of 40 between weaving, printing and dressmaking, it is estimated that the "recurrent overhead" cost of weaving a square metre will be about R6.60, on top of which material costs will be R4.50. Allowing a 25 per cent profit margin, the total costs plus profit per square metre will be R13.90. Production is estimated at 55 square metres a month, assuming that 33 girls will actually be working at any one time. In printing, recurrent overheads would be 11c per metre, assuming that 33 girls can produce 3 000 metres in a month. Material costs would be another 57 c and profit (at 25 per cent) 17 c, so that cloth should leave the workshop at 85 c per metre. In dressmaking, 34 girls should be able to make 340 dresses in a month, which puts recurrent overheads per dress at R1.11. Materials will cost another R1.25 and 25 per cent profit 59 c, making a total ex-works price of R2.95 for the average dress. This gives some idea of the basic economics of a textile workshop along Serowe lines. It is still too early to say much about the recurrent position at Shashe River, except that turnover has showed a steady monthly increase since the start and the relationship between costs and prices is such as to ensure that the Brigade will cover its running costs, provided the output can be sold, as it apparently can be.

Mechanical Brigades

Here, to a very large extent, we are still talking in hypothetical terms. About R25 000 has been raised at Serowe in loans and grants from various sources, mainly Oxfam, and a garage has been built and equipped and a machine shop fitted out. This could serve as the "plant" for training five or six motor mechanics over a 5-year course and 16 or so machinists (turners, millers, toolmakers, motor engineers) over 4 or 5 years. Such a training programme would require two skilled motor mechanics and four of five fully skilled machine workers—a much higher ratio of instructors to trainees than in other Brigades.

General problems of Brigades

We have now described the existing Brigades, discussed the main problems of particular types of Brigades, such as farmers, builders and textile workers, and looked at some individual projects into which the movement might expand. It remains to consider some questions about the future of brigades in gneral. These resolve themselves into (1) problems of training and of "academic" teaching for Brigade students, (2) problems about the relation of Brigades to other institutions in the country, such as the Government and its various ministries and departments, local

authorities, and the National Brigade Co-ordinating Committee, and (3) the question whether a "master plan" for Brigade expansion and development ought now to be drawn up.

Training and teaching

At present the Brigades recruit their local instructors in a haphazard way and where they can, so far as I could judge, their quality is distinctly uneven. There is no regular source of supply of instructors and the Brigades have to compete for them with the Government, industry and other institutions. Given that instructors' salaries are part of the costs that Brigades have to cover, the scope for raising salaries is not great. (Most Builders' Brigades, for example, pay R60 or R65 a month: it would hardly be possible to lure a good foreman away from industry at that wage, but Builders' Brigade instructors, as well as having to act as foremen on the job, are also responsible for training.) Some of the people whom I spoke to, among others, the Principal of the Botswana Training Centre, argued strongly that Builders' Brigades must pay considerably higher salaries. It was pointed out that experienced men can effect considerable economies on the job by knowing where they can, so far as I could judge, their quality is distinctly uneven. There is no cy, and that these savings justify higher salaries.

I see the force of these arguments, but I do not feel that the answer to the instructor problem lies in competing with higher salaries on the existing market. Certainly if the Brigade movement is to expand, and probably even if it does not, it seems necessary to think about methods of ensuring a more regular supply of instructors, who will have been specifically prepared for the combination of jobs which they will be expected to do in Brigades. This implies some form of training institution for instructors—a "Brigade teachers' training college". The job of planning such an institution and setting it up will not be an easy one, above all, because the combination of qualities that a good Brigade instructor should have—industrial skills and experience, plus the ability to teach, plus (one hopes) a high degree of personal commitment to the Brigade idea—will be difficult to find or to inculcate. Recruiting will therefore pose special problems. Probably it will be best to think in terms of a flexible training programme, which will take people with rather different skills and aptitudes and provide them with the extra training they need to become well-rounded Brigade instructors. The people most likely to become good Brigade teachers will be those who have already shown entnusiasm and capability in Brigade-type situations.

I recommend therefore that the National Brigade Co-ordinating Committee should conduct a thorough project evaluation for a Brigade instructor training establishment, with a view to determining (1) the future requirement of Brigade instructors throughout the country, given various assumptions about the expansion and development of the Brigade movement, (2) the investment that would be needed for such an establishment and the extra staff it would require, and (3) the nature of the training programme that would be needed, given the skills and academic attainments of the likely recruits. This study would provide the basis for an application to an outside agency for the necessary capital funds.

A National Brigade Programme?

For some time those most closely involved in the Brigade movement have been asking themselves whether the stage has not been reached when it would be right to think in terms of a really ambitious expansion of Brigades on a national basis. Such an expansion would require an approach to a major donor organisation, probably the World Bank but possibly the Ministry of Overseas Development. Now

that we have completed our examination of Brigades and their problems, we should be in a position to answer this question.

The preconditions for contemplating an ambitious programme of Brigade development are that Brigades should have proved themselves to the extent that an application for funds is likely to succeed, and that there are good reasons for supposing that an expanded scheme would in fact justify itself. I believe that this requires that there should be in existence a prototype or model, which has proved successful enough to justify being copied simultaneously at several other places in the country. Since, as I have argued, the advantages of including a viable farm training programme in any comprehensive plan for Brigade development are very great indeed, and since the problems of devising such a farm training programme (above all, the post-training problems) have not yet been overcome, I believe that it will be necessary to wait until more progress has been made towards solving these.

Unfortunately, therefore, I cannot advise an application for funds to finance a massive expansion programme at this stage. Brigade development will therefore have to proceed on an *ad hoc* basis, as it has done up to now, but with the hope of an ever-increasing degree of Government commitment—both to helping Brigades already established and to supporting applications for money to start new ones. Meanwhile, the national interest requires that every possible effort should be devoted to solving the problem of a farm training programme that will enable substantial numbers of young Batswana to achieve really worthwhile increases in productivity on the land. Brigades in general have shown that they can provide a training for youth which is cheap, realistic and effective, but they can still only reach limited numbers of young people. If they can solve the problem of the farmers, they will be capable of launching an attack on the wider problem of underdevelopment.

Number of agricultural holders and cattle by size of cattle-holding and region

Source: 1968–69 Agricultural Survey, page 30. Key to regions: 1, Ngamiland, Chobe; 2, Ngwato and Francistown District; 3, Ngwaketse, Kweneng, Kgatleng and Tlokweng; 4, Barolong and Bamalete; 5, Botletle River. See the survey for the (liberal) definition of "agricultural holder".

Region		Total		No cattle		1–10 cattle		11–25 cattle		26–50 cattle		51–100 cattle		100 cattle	
		Holders	Cattle	Holders	Cattle	Holders	Cattle	Holders	Cattle	Holders	Cattle	Holders	Cattle	Holders	Cattle
1.	No.	5 304	131 812	1 528	–	1 074	6 112	1 246	22 260	809	31 534	475	31 282	172	40 623
	%	100	100	29		20	5	23	17	15	24	9	24	3	31
2.	No.	21 852	586 776	7 582	–	5 214	30 633	3 579	61 093	2 549	93 251	1 493	104 873	1 435	296 925
	%	100	100	35		24	5	16	10	12	16	7	18	7	51
3.	No.	16 685	449 063	3 870	–	2 399	15 358	5 576	97 325	2 840	98 734	1 396	101 429	604	136 217
	%	100	100	23		14	3	33	22	17	22	8	23	4	30
4.	No.	2 805	39 938	745	–	899	6 190	661	10 730	394	13 856	65	5 004	41	4 158
	%	100	100	27		32	15	24	27	4	35	2	13	1	10
5.	No.	1 108	29 285	264	–	237	1 417	256	4 886	226	8 571	63	4 663	62	9 747
	%	100	100	24		21	5	23	17	20	29	6	16	6	33
Total															
No.		47 754	1 236 874	13 988	–	9 822	59 712	11 318	196 293	6 818	245 947	3 492	247 251	2 315	487 671
%		100	100	29		21	5	24	16	14	20	7	20	5	39

Extracts from a Report on Education in the Botswana Brigades

By Virginia Makins, with Getz Moroeng and Henderson Tlhoiwe

I was invited to Botswana in 1971 by the Ministry of Education to examine and report on the content of academic teaching at present given to Brigades, and to recommend how this might be improved in the light of the overall aims of the Brigade movement. I was also asked to prepare a skeleton academic curriculum for Brigades.

I accepted on condition that a Motswana teacher was associated with the study. I made this condition not only because of the language problem and my lack of local knowledge but also because I felt that valid conclusions could only be reached by someone with long experience of teaching young Batswana, and a built-in knowledge of their aspirations and potential. I was lucky in that not one but two teachers shared in the research for this report—Henderson Tlhoiwe, Secretary of the Kgatleng Youth Development Association and Principal of Linchwe II School, toured the northern Brigade centres with me, and Getz Moroeng, Vice-Principal of Shashi River School, came on the tour of the south. Because of time and distance, the writing of this report is entirely mine, but I have been conscious throughout of how much I depended on their insight and judgement.

We spent three weeks in July 1971, touring the Brigade centres, and I then spent a further week in Gaborone, talking to officials at the Ministries of Education, Agriculture and Development Planning, the Departments of Community Development and of Co-operatives, and others involved in technical and vocational training.

Throughout, I have interpreted my brief in its widest sense. The phrase "academic teaching", with its overtones of school subjects and examinations, does not chime well with the aims of the Brigade movement. Trainees spend, at best, one-fifth of their time in the classroom. If one is to consider the educational potential of Brigades, it is impossible to separate theory and non-theory teaching or classroom teaching and practical work.

Motivation

In several of the Brigades that I visited, motivation was very high. One Brigade was even prepared to argue with secondary-school students that they—the trainees—were receiving a better education for Botswana's needs. Two groups stood out: first, not surprisingly, boys in the better-run Builders' Brigades, who had confidence both that they were getting a professional training and that it would lead to a job, and, second, girls in small craft groups, who were enjoying the work, the company and having something to do but who were very keen for more schooling. But in some others, there is no doubt that motivation was very low indeed. The trainees felt like unpaid labour, they had lost all confidence in their teachers, and they had very little idea of what the Brigade was all about.

The first essential is that Brigades must develop an integrated programme, in

which the three wings of the Brigade—academic teaching, theory teaching and, above all, practical work—reinforce each other. Such integration is a main theme of this report, and I will return to it again. The training must also give individual trainees a chance to acquire new skills, to use them in an active context (in contrast with their primary-school experience) and to take decisions. Planning areas where this can be done without jeopardising the efficiency of the Brigade is one of the trickiest and most important tasks of instructors and managers, and this—the participation of the trainees in the work of the Brigade—is another main theme.

Most of the trainees' time will not be spent in the classroom but on productive work. Here, there will inevitably be much repetitive manual work; building trainees at first are only useful on labouring jobs; textile girls will spend long hours carding or spinning. New trainees can only contribute to the productivity of the Brigade by doing the most boring and unskilled jobs. There is a danger here that they will soon begin to feel like unskilled—and unpaid—labour. They have almost certainly come to the Brigade with the hope—however unrealistic—that they are getting to a kind of school. If they begin by feeling not only disgruntled but also exploited, the Brigade stands little chance of achieving its aim of turning out self-reliant artisans.

When it comes to the external things that Brigades can do to encourage motivation, there are important general principles that may apply. Rewards and sanctions must relate to, and reinforce, the aims and principles of Brigades, notably, the aim of making the trainees productive and self-reliant people. Sanctions should therefore only apply to actions which jeopardise the working efficiency of the Brigade or disrupt the lives of the rest of the Brigade.

If bonuses are a short-term incentive, certificates could be a long-term one, and several people in the Brigade movement thought that they should be. People were divided into those who thought that certificates could do no harm and were the least that a Brigade could do after taking two years from someone's life in a training programme, and those who thought certificates denied the whole aim of the Brigade—to produce self-reliant people capable of making their own living. I would suggest that Brigades should give reports to their graduates (some people would maintain that, because these might be used to get modern-sector jobs, they somehow betray the "Brigade ethic"). But it should be made as clear as possible that these are reports, proving attendance, indicating what training has been received, and possibly pointing to special talents, where they exist. Such reports could have perfectly valid uses, in the light of the Brigade aims: they could help trainees who wanted to raise loans to improve their lands or start a small rural enterprise at one level, and they could make an acceptable passport to further training at another.

Instructors

Brigade instructors include successful professionals who have joined a Brigade because of the stability (financial or geographical) that it offers; less successful professionals going for less demanding work; self-employed people who want secure employment; experienced craft teachers; and people who have only just finished training themselves. The professionals probably have no experience of teaching, the teachers have no experience of business, and recent trainees have no experience. All that could be changed if the plans for the National Brigade Staff School materialize; the School should be flexible enough to provide what is needed to fill gaps in an individual's experience.

All this can be much improved by in-service training courses run by the Staff School. What will be harder to change are the attitudes of the instructors, both to

trainees and to managers. They are used to living and working in a very hierarchical atmosphere, where status is clearly defined, where managers do not dirty their hands with manual work, and where, too often, decisions are taken by Europeans and executed without question by Africans.

Managers

It was noticeable that, when managers did do some teaching, it seemed to pay off in terms of morale. I would recommend that all Brigade managers should teach. Apart from the value of their expertise—particularly in technical subjects, commercial studies and mathematics, where it will be difficult to recruit local part-time teachers—it will help them to get to know the trainees, to be accessible to them, and to prevent the build-up of resentments and grievances, which may destroy the educational value of the Brigade.

Brigades and the community

The attitude of the local community is all-important to the influence a Brigade can have on the trainees. If local people do not understand the Brigade, they will echo all the worst suspicions of the trainees that the Brigade is simply using them as unpaid labour, subject, as Lawrence Notha has put it, to "the trickeries of a parsimonious employer".

It is outside my terms of reference to go into detail on how Brigades should be managed, but I cannot emphasise too strongly the educational advantages of having a local management committee. Controlling a small enterprise which uses simple means of production and demands management skills at a low level of complexity will be an immensely valuable education to the people involved. It will also help to get the aims of the Brigade explained around the village and, by spreading and localising responsibility, greatly reduce the likelihood of crises and strikes arising from misunderstandings between trainees and managers.

It is also important that Brigade managers and co-ordinators should be energetic in keeping their committee informed, asking members to help where they are specially qualified to do so, and making sure they are in fairly regular contact with trainees. (This should be much easier in a small rural-development project or an *in situ* training scheme than in a separate institution or Brigade/school.) If local people are given real powers in managing Brigades and made to see the importance of their contribution, their interest and effectiveness will grow. If their powers are entirely nominal and managers run the day-to-day work without real consultation, while long-term decisions are made at a national level, they will rightly lose all interest, and the two-way educational potential of the management committee will be lost.

Timetable and subjects

Again, and for the same motivation reasons, the work should—at least for some months, probably for the first year—be in regular separate sessions. Partly to reassure the students by at first giving them the idea that they are doing "real" subjects, such as they imagine Junior Certificate students have, the separate periods should have separate names: English, Mathematics and Development Studies. I discuss what these labels should cover in practice below.

Patrick van Rensburg two years ago wrote a paper suggesting that these subject divisions did not work. He suggested that the subject matter to be covered would be easier to define if arranged in three sectors: first, administration of Brigades and co-operatives; second, support knowledge for vocational practice and theory; and third, motivation, orientation and support knowledge. These divisions may be useful

in considering what ground should be covered in any Brigade programme, but I think that, given the attitudes and previous experience of trainees, instructors and teachers, it is more helpful to stick to more familiar labels, which can provide a rather closely defined framework on which to base the teaching. That also seems to me the best way of overcoming the problems of high teacher turnover and providing continuity in Brigade teaching. If people—trainees and teachers—are made to work, at first, along lines which are too unfamiliar, there is danger of confusion, groping experiments and constant changes of tack, and the trainees, quite rightly, will lose confidence in their teachers.

Some people—all of the expatriates—dispute the need for English: they claim that at the rural-development end of the training scale trainees will not need it, and even at the higher end it is impossible to do anything useful in one or two hours a week. But every Motswana whom I talked to made the point that, even at the lowest level, in any kind of working life, you quickly bump up against a language barrier if you want to improve your position. Selling, ordering, reading catalogues, reading the *Farmers' Weekly*—all these could be helpful in building up even a part-time rural occupation. While I do not think that Brigades (except, possibly, the three-year-training, modern-sector Brigades) can realistically hope to get all their trainees fluent in English, I think they can work on the basis provided by the primary school, make trainees think about how they themselves can improve their English and give the ones who do have an aptitude for English a chance to improve considerably. English is the best medium, both for the development of the country and for each individual in it: anyone in any kind of a training programme in Botswana has a right to have a crack at it.

It does not seem to me to matter at what time of day the lessons take place. At places like Shashe River and Tutume, where "academic work" was done first thing in the morning, this was claimed to be best—in the evenings, people said, the trainees were so exhausted that they could not manage intellectual work. I think this is a false idea of what non-vocational studies should be about. My view is supported by the success of evening classes at Maun. Evening studies have the advantage of making it easier to borrow the resources of local schools—teachers, books, and libraries. As long as there is some kind of gap between work and study, there seems to be no exhaustion problem.

Evening studies have other advantages. Where trainees are living in a small, rather isolated community, they fill the evenings in a way that helps to prevent them getting the counter-productive impression that they are just unpaid labour, and (where it matters) they leave the daylight hours for productive work, and so help to fit non-vocational work into the cost-covering constraint.

This rather formal pattern of academic teaching should be followed for at least three months, and probably for a year. In the second and—when it exists—third year, the organisation of non-vocational teaching should vary, depending on the kind of Brigade. Builders are one special case: work may take them out, for several weeks, to jobs which are far from their home base. In their case, it may be a good idea to take them off work one week in seven or eight and have a concentrated period on non-vocational studies. This would also be possible for workshop groups, if it was felt that they would respond well to spending a block of time on one project. Farmers, on the other hand, can fit in study at slack times of the day or year.

But whatever practical arrangement is adopted, I think there should be a new pattern when it comes to second-year work. By that time, the motivational crutch of a simulated school situation should not be necessary: the students should understand the point of the Brigade.

Most of the second- and third-year students whom we talked to asked, not for "academic subjects" but for "more theory"—work which taught them more about the job. In the second year, Brigades could meet this demand by laying on an integrated "commercial studies" course, aiming to prepare students in rather specific ways for their working lives. Such a course would also continue the work done in the first year by deliberately giving trainees practice in the kind of mathematics and English that they need for their work.

Mathematics

With mathematics, it is easiest to define the ground which should be covered. Trainees should be able to handle addition, subtraction, multiplication and division with whole numbers, simple fractions and decimals. They should be able to measure accurately and sensibly and, of course, metrically. They need to understand how to calculate perimeter, area and volume in practical situations. They should have an idea of scale, and know the importance of approximation and estimation.

The first thing that must be done, the moment that they come into the Brigade (and this applies to all subjects), is to explain, not once but over and over again, that everything they are doing is relevant to real work. This cannot be done simply by telling them, and then giving them a lot of text-book or blackboard exercises. All problems should be taken from the job, preferably a real job that the trainees are engaged on. Measuring is a good thing to start with, trying to get the metric measurements embedded in their experience, so that they use them naturally. Measurement may lead to work on area, perimeter and volume and some rough scale drawing. Work in the first few months should be planned to give the trainees something slightly different from what they were doing in primary school—they must be made to feel that they are working in a practical grown-up world. The work can also be planned so that unobtrusively, as an integral part of the problems being tackled, the basic four operations are constantly practised.

Teachers (especially new teachers) should try to spend some time in the workshop or out on the job, watching what mathematics is being used and bringing it into the classroom, where they can set problems based on real life, then vary them, and ask trainees to think of other situations that would produce the same kind of problems. Measurement comes in all the time in every job. Everyone—builders, farmers, textile workers, dressmakers, tanners, potters, brewers—must be able, at least approximately, to calculate quantities of materials, liquid or solid, three-dimensional or two-dimensional. Each needs some kind of working drawing to a rough scale—they will be different for each trade, but they are a useful tool in any planning. Trainees should be constantly asked to think when they must calculate roughly and when exactly. They should not be asked to do beautiful technical drawing but led to see what level of accuracy is useful.

Other mathematical problems will become relevant later on in the first year, when the trainees are beginning to get a glimpse of the commercial operation of the Brigade. At first, they will be dealing with separate things—tools, materials, when and how to use what: that is the moment to deal with quantities and measurement. Later, when they are doing their job confidently as a routine, that is the time to lead them to think about what the whole Brigade is about. In maths, this can be done by thinking about prices and costs, and money, and working on problems involving these—and, unobtrusively, giving a good deal of basic arithmetic practice. By the end of the year, the trainees and teachers should be able to see where they need quick mental arithmetic, where it is useful to know multiplication tables, what operations with fractions and decimals they actually need—and, if necessary, they can do remedial exercises concentrated on special aspects (in a place

which has one, a SRA mathematics laboratory can be used here, and some trainees may be motivated to work with it in their spare time).

Exactly the same approach should apply in the second year, when mathematics could come into an integrated commercial-studies programme. Projects involving ordering and estimating, price tables, costing and prices will all need basic mathematics. Drawing should continue as part of the general exercises in planning and managing jobs. Builders may need special work on basic technical drawing—simple projections, for instance—but the emphasis should always be on rough working drawings and practical plan readings.

Obviously, many of the new mathematical techniques used in primary and secondary schools will be relevant to teachers of Brigades, and teachers accustomed to the SMP teachers' handbooks, for instance, will be able to adapt those techniques. But there seems no substitute for Brigade teachers informing themselves about the working life of Brigades and preferably occasionally taking part.

English

Brigade teachers should not be unrealistic about what they can achieve. In the time available, they cannot hope to do more than give the students a new approach to learning English, and slightly improve the level they came in with. Some trainees will do very well indeed—I was impressed by the level of some of the English I met—but inevitably others will not.

I believe that, once trainees are confident that the teacher knows what he or she is doing, and are working to a plan specially tailored to their lives, their motivation will be such that many of the present problems will disappear. If the teacher has convinced them that talk is important, and that talk is "real work" in English, they will no longer resent teachers who "make us tell stories and things all the day". In fact, I sat in on one class where trainees were telling stories and enjoying it a lot.

Development Studies

As the Junior Certificate and now Cambridge GCE subject that has been developed at Swaneng Hill and Shashe River Schools, Development Studies is a very ambitious course in economics. Teaching it to young secondary-school students requires a high level, both of understanding of the subject matter and of teaching techniques, to relate it to the students' lives, so that they too will understand. It is an excellent course, relevant to the needs of the country, interesting for students, and a good change from the kind of work they were doing in the primary school. But, even so, it will be a constant effort to stop it becoming just another school subject, memorised for examinations. I do not think that it is a suitable model on which to base a course even for Builders' Brigades with their three-year course leading to a job in the modern sector.

I was extremely impressed by the level of enthusiasm and understanding of Brigade students at Shashe River School, where Development Studies has been taught to Brigades from the start by two people who had worked for some years on developing the course. But, in the time available and in the special circumstances of the Brigades, I cannot imagine this success being often repeated. I fear that inexperienced teachers, who feel that the objective of the course is to get students handling words like factors of production, GNP, *per capita*, parastatal, manpower, white-collar, grant-in-aid, infrastructure, etc., will simply be forced back on teaching by rote from a textbook, and very little will stick.

I would not set any ceiling for what might be attempted in a Development Studies course for Brigade students, but I would recommend starting very simply. Why

are we all in the Brigade in the first place? What is Botswana's education system? How many of our brothers and sisters and cousins finished primary school and went to secondary school and what are they doing now? Any recent J.C. leavers among the relatives of the group—what sort of jobs are they getting? Our families, how do they live, do they have money to spend, where do they get food and clothes and houses? How many cattle do our families have, how do cattle fit into providing the things we need to live? Do any of our relatives have paid jobs? Have any worked in South Africa, what did they earn, what did they bring back, what was it like in the mines?

This kind of discussion can start at any time, in the workshop, on the job, in an English lesson. Instructors and teachers should use any chance to talk about the life-situations of people in Botswana, especially the people in the Brigade and their families. But I think it is a good idea for each group to have at least one hour a week in the first year when time is formally set aside to discuss these things. Depending on the level of the trainees and the adults available, the discussion can be in English or Setswana—or in a bit of both—but I would recommend that all the staff involved with the group of trainees in question—academic teachers, instructors, managers—should try to turn up as often as possible.

The ground that the discussion attempted to cover would, of course, vary very much, depending on whether the Brigade was training for the modern sector or for rural development, whether the course was a short or long one, whether it was for men or women. But for all groups, at different levels, certain basic themes should be emphasised: that people can take action to affect their environment and change it; that they can affect very specific things, like how a plant or animal or child grows; that there are services and advisors available to help them to find out how to do this; that resources, such as land and water and money, do not just exist but that they can be neglected and wasted or conserved, developed and invested. These themes should be applied in specific ways which relate to what the trainees are doing and what they are interested in.

Understanding their lives, their educational chances and those of their children, and the economic situations of their families and their country is just as important for men as for women. But, in addition, any training programme for women should include work on health, nutrition, and child development. This work should be done in as active a way as possible: nutrition could be linked with work on gardening, the care of small stock and poultry, and cooking, and any workshop for women should consider starting a nursery for children. If the Brigades' objective is education for development, this kind of course for women seems one of the most productive lines that they can follow.

Second-year Commercial Studies

There is no reason why this kind of semi-formal discussion should not go on in the second and third years, but that, I think, should be up to the trainees: if they want to continue, they should organise it themselves. The efforts of the staff, and the formal educational programme of the Brigade should be a course designed much more specifically to prepare them for their working lives, involving the commercial operations—buying, costing, selling, pricing—needed for their work at the appropriate level. They should understand how their own bit of economic activity fits into the national pattern, and into the economic situation of southern Africa.

Allowing the trainees to participate in the work of the Brigade is the best way of giving them the knowledge and confidence they will need if they are to create some kind of employment for themselves after training. Clearly, if the Brigade is

to run as an efficient cost-covering enterprise, trainees cannot do all the planning. Some of the project work could be based on games and simulation exercises (a few Brigades have already experimented quite successfully with simple money and business games), but games are no substitute for projects which deal with real clients, real work, and real profits and losses.

Where a Brigade was aiming directly at setting up its graduates as a co-operative or small rural industrial group, people with special talents for the administrative side or the design side could be identified and given special training.

Extra-curricular activities

Brigade trainees follow a tough programme of practical work and evening studies: they have virtually no extra-curricular time. Nevertheless, there is a need to show them something of the world outside their particular village and Brigade. When Brigade staff are going to meetings or buying materials or marketing the Brigade produce, they should try to involve and take along a couple of older trainees. Whenever possible, they should try to build links with other Brigades and arrange occasional meetings between trainees.

The outside world should also be invited to visit the Brigade. The first-year Development Studies course should help. Members of local governing boards should be encouraged to visit the Brigade on normal working days. Local primary-school children—particularly the Standard VII classes—should also be asked around, perhaps once a year. Showing off the Brigade would be good for the morale of trainees and do a great deal to inform the local community of what the Brigade is doing and of the opportunities it offers them and their children.

Theory and practical work

All the points already made about the trainees' motivation and desire for formal classroom work apply to theory as well as academic subjects. The trainees will be keen to listen to lectures and write down notes, but they will not necessarily see the relevance of such theory to their day-to-day work—there will not be any transfer of the classroom learning into practical situations.

For most Brigades, the level of understanding need not be very abstract or scientific. Basically, all students should understand the use and care of tools and materials and some of their properties. Carpenters need to know about wood and how it behaves, builders about bricks and mortar, craft workers about leather or textiles or dyes, potters about glazes. The trainees will learn much more about these things if they are encouraged to notice and question why things happen on the job, rather than if they are told in a classroom. What happens when you fire a pot, put more sand in a concrete mix, feed a cow bone meal? If, from the first day they arrive in the Brigade, the trainees are constantly reminded by instructors to think about what they are doing and ask questions, then it will be easier, as time goes on, to demonstrate some of the principles underlying what they do.

One practical way of achieving this kind of questioning (which would probably contradict the way the trainees have been taught to behave in a primary school) would be for the Brigades' academic teachers, in the first weeks, occasionally to make time to do some practical work with trainees and ask very basic and simple questions about it. This would help the teachers get to know the trainees and to relate their teaching to the job, and it would demonstrate to the trainees the new kind of place they have come to, where teachers find it normal to do manual work and people are not afraid of showing their ignorance and asking questions. Instructors, if asked a question, should allow some discussion and guessing, not just give an answer straight away. Perhaps there will not be time for much discussion

on the job, but the instructor can make a note of a point that comes up, and return to it in the next theory session.

Just as it is important to bring the theory into the job or workshop, it is important to bring the job into the classroom. If carpentry instructors are discussing how different wood behaves, they should let the trainees experiment with bits of wood. If builders are discussing the uses of arches, they should first build some models and think about their properties. I do not mean that there is no place at all for rote learning. Most jobs involve having a few formulae at one's fingertips, and applying them—the mix for cement or for an animal's feed or for a dye. Most jobs also involve having some working reference notes, and knowing where to look things up when you have forgotten them. Trainees will need memory and notes (preferably duplicated and handed out, not dictated at great expense of time, efficiency and enthusiasm. But, first, they must have seen the need and usefulness of the formulae, and instructors must make sure that what they teach is kept to the minimum of what is really useful on the job.

Planning the teaching (and in teaching I include talk on the job, not just in the classroom) it is important to remember how people come to learn and understand principles in a way that they can apply them in different situations. They do not acquire a new idea or concept at one sitting. They do it gradually, by meeting it in several situations and making connections. When they have ascertained that a phenomenon happens (cows get fatter if you feed them bone meal), they may or may not want to understand why it happens. There is no point in telling trainees a fact and then expecting them to apply it. For instance, a building instructor can train people to say that triangles are rigid. It will not mean a thing unless the trainees understand what a triangle is, what is rigid, and what is the use of rigidity in building.

It is in the nine-tenths of their time that trainees spend with instructors, on the job and in the classroom that their basic attitudes to work, the job and the Brigade will be formed. Instructors must therefore work out, and constantly reinforce, attitudes they would like trainees to adopt. It is no good telling trainees about the importance of taking care of tools and materials, and then in practice leaving them lying about in the rain. It is no good talking about the commercial importance of not wasting materials, and allowing waste all over the shop. It is no good going on in a Development Studies discussion about the national importance of manual work, and then making the trainees work in a situation in which salaried teachers, managers and instructors never take off their jackets.

Finally, I would like to return to the one crucial attitude that Brigades should constantly try to inculcate, whatever the level of the trainee. That is the idea that individuals have power to influence both their own lives and the natural world around them. They can, by producing goods, earn money. They can learn, and apply what they have learnt to improve their environment. Farmers can, by skilful intervention, make things grow better; by neglect, they can let things die. Mothers can do the same with children; they can feed them properly, play with them, and help them to learn or neglect them and stunt their physical and mental growth.

The trainees' whole life and previous experience has almost certainly given them a fatalistic idea that things happen to them more or less magically. The Brigades are in a much better position than secondary schools to show them that this is not necessarily so. But they cannot do this by simply telling the trainees, replacing traditional African magic with white man's magic. They must provide constant opportunity for the trainees to experience and see the effect of a scientific (in the most basic sense) approach, and give them a chance to discover and apply their own power in solving problems and making things happen.

Teaching materials

It is unfortunate but true that anyone in English- or for that matter French-speaking Africa who wants to teach courses aimed at developing young peoples' understanding of their own economic and political situation and that of their country, and its place in a wider international context, must drum up a lot of his or her own teaching materials. The big publishers who produce for the English-speaking African market are gradually bringing out more books relevant to African countries, but their main market is the schools and their commercial aim to produce texts and materials which can be sold over as wide an area as possible. In science and mathematics, the wider regional approach does not matter: in social studies and general reading, it is likely to produce materials which are too bland really to grip the interest and imagination of any particular group.

Most of the books are aimed at secondary schools working for examination syllabuses modelled on English syllabuses. The market for adults who want simple reading materials, relevant to their lives and interests, is not rich enough to generate much production. One of the most vital functions of a National Brigade Staff School would be to act as a resource centre, generating materials suitable for the educational programmes of Brigades.

If the approach to education in Brigades which I have outlined is adopted, using a textbook approach would anyway be counter-productive: once you give the trainees textbooks, you will reinforce the learning habits they acquired in primary schools, and get back to a situation in which they do not relate their work to the real world. A much more appropriate way of providing materials would be to produce a series of handbooks for teachers and instructors. These would have to be varied for different skills, and different levels of trainees, from the village-centred, rural-development level to the more sophisticated, modern-sector Brigades. Such a handbook could be a guide both to primary and secondary teachers working part-time with Brigades, and to instructors and managers who take on some of the non-theory teaching.

Mathematics

Certainly teachers—especially the part-timers who have little spare energy to plan Brigade teaching—will need specific guidance on where to look for mathematical problems in the type of Brigade they are teaching. A handbook could give them ideas—measure some ground and work out how much fencing it would need, add up the cost of materials trainees used on the job today or, with more experienced trainees, work out the profit on a job or the running cost of a truck.

I do not mean that there is no place for using textbooks or, when it is available, an SRA mathematics laboratory to give Brigade trainees confidence that they can cope with mathematical operations when they have seen the need for them. The National Brigade Staff School might well eventually adapt and circulate some programmed mathematical materials for trainees to work on in their spare time or in idle moments in the workshop or on the job. But the main basis of the work should be the job (at this level and in the time available, mathematics which is not needed on the job is not worth teaching) and the set-your-own-problems approach, backed by good handbooks, seems most suitable. If it were also backed by in-service courses for teachers, run by the NBSS, so much the better. It is important to remenber that work in Mathematics can include a lot of English, in a practical and casual way.

English

There are two kinds of materials for English, formal and informal. Each Brigade should probably try to have a set or two of a graded English course available for

trainees who want to work at English on their own—something like the Rapid Reader series or Ladder Books. If the Brigade is based on a school with a SRA reading laboratory, trainees who are keen should be allowed to work with it in what little spare time they have. Where motivation is high, the suitability of the reading material is not too important.

As in mathematics, a special handbook for Brigade English teachers, giving them ideas on how to approach their classes and suggestions on how to generate exercises and activities from their trainees' everyday lives and work would be essential, especially for part-time teachers. Possibly this should include some ideas for practising basic English structures—a minimum of drills to give teachers and trainees confidence, and ideas as to how they should invent more of their own.

There are some obvious sources which will be useful both for English and Development Studies. The *Botswana Daily News*, with its short reports, seems ideal. Other newspapers and magazines, trade journals, advertisements, catalogues—all these can provide relevant, well-illustrated material which will match the work the trainees are doing on the job, and the things they are discussing in Development Studies. United Nations organisations are getting better at putting out materials aimed at developing both literacy and understanding of a skill—the Food and Agriculture Organisation's short farming-topic books, for instance, are excellent for first-year trainees. Unesco's work-based literacy projects should increasingly produce suitable materials related to different skills.

Brigades should collect non-fiction reading materials wherever they can. Primary-school materials are best on the level of English that they use, but their content and illustrations are usually widely inappropriate to older Brigade trainees. Some non-fiction primary books (for instance, the Ladybird series) are not too bad and could form part of a Brigade library. But all kinds of other non-fiction reading materials can often be obtained from government information services, industry, embassies and so on.

The NBSS and its students could work on producing materials or identifying bits of existing readers and texts which are suitable for Brigade English and Development Studies—short, simple pieces on local government or welfare services or child care—and circulating them in duplicated form. There are certainly good materials being produced elsewhere—in Zambia, Tanzania, Kenya, etc.—which they can collect and circulate.

For fiction, Brigade teachers and organisers should look for adult materials which are short and simply written; comics and popular magazines, where they are available, are a good start. Materials which are being developed for secondary schools may be suitable, but probably a short story by a good writer is better than watered-down and simplified texts. African literature provides excellent stories at various levels; teachers can try reading powerful extracts aloud and then encouraging people who want to read for themselves.

Some of the best materials are those developed on the spot. The manager of the Maun centre had produced good materials. Mrs. M. Kibel's stories, which are being circulated at Swaneng Hill, are another good example; I saw one very disgruntled Brigade class completely absorbed and quiet, each reading through a duplicated copy of one of them. (These materials were in striking contrast to a set prepared for Shashi Brigade students by an expatriate, in which relevance and Brigade ethics were hammered to death.) The Staff School, in its role as resource centre, could collect, duplicate cheaply, and circulate short stories and sections of books which have worked well with trainees.

At the level of the individual Brigade, good writing and stories by the trainees can be duplicated and used as reading material (a technique which is often

used successfully in English schools). Good story-tellers, who have some grasp of spoken English but find it difficult to read or write, can dictate short stories for circulation. Giving the trainees a chance to see their own English in print is an excellent way of developing their confidence, both in their own performance and in the style of English teaching followed in the Brigade. Some of their writing could get wider circulation if the existing *Brigade Quarterly* could be expanded into a bigger, possibly monthly magazine, in which Brigade trainees could write for each other.

In this section I have concentrated on materials in English, but everything I have said can be applied to materials in Setswana, and Brigades and the Staff School should make every attempt to collect, write and circulate reading material in Setswana which will contribute to the general education of the trainees.

Development Studies

Here teachers need suggestions about good topics on which to centre the discussion (education, jobs, the place of what trainees are doing, first in the local economic picture and then in the national one). Background fact sheets could be prepared on topics, so that teachers would have material to feed into discussions at appropriate moments. A set of such fact sheets would prevent Development Studies sessions becoming too anecdotal and rambling, but each section must carry the reminder that these are *background* notes. There is no point in asking trainees to memorise real statistics of population or education or employment. What is important is that they should have an idea of proportions, and an understanding of the broad economic and political situation.

Conclusion

What I have suggested here sounds like a lot of work, but the National Brigade Staff School should have the resources and people to undertake it. There, instructors, secondary-school teachers and students, and Brigade trainees can pool some of their knowledge and talents to produce materials, and try them out in practical situations. Working on resources in this way is excellent training, making the students at the Staff School think deeply and practically about the educational approach of the Brigade as a whole. Producing teaching notes, identifying the hard core of theory that students might usefully be given in permanent note form, devising ways of setting relevant problems and exercises without a textbook by using the knowledge and practical job experience of trainees will do more to improve their own approach to Brigade education and training than any number of lectures on educational theory.

At the level of the individual Brigades, the smaller centres and those using part-time teachers may have to draw heavily on resources produced at the centre. But the big Brigade groups based on secondary schools should be able to do a lot for themselves. I was impressed by the enthusiasm and energy of teachers at Swaneng Hill, Shashi River and Tutume in producing their own teaching materials. If this production is geared to a practical and integrated teaching approach along the lines suggested in this report, if the teachers and instructors have occasional opportunities to meet and exchange experience and materials, and if they are backed by a central resource and information centre in the Staff School, I see no reason why the Brigades should not, in a few years, build up a stock of experience, materials, and know-how which will be valuable to many other educational institutions besides the Brigades.

Brigades in the national system

The Brigade movement has links with almost all sectors of the educational system and, if it is to develop as part of the national system, these links must be strengthened: in particular, it is important that there should be no duplication, and that resources should be deployed as economically as possible. Here I consider the potential relationship of Brigades with other institutions of higher and further education, and with schools. Happily, in a small country it should not be difficult to have an easy interchange of ideas and resources between institutions—already the links between Brigades and some other sectors have been close and productive.

The University Adult and Extension Department

This is an obvious source of materials and courses which can be used by Brigades and adapted to their needs. The University Extension Department is being planned as a centre which can be called on to provide suitable courses for all kinds of groups in the country: when they get going, they could clearly be invaluable to the Brigade groups. Brigades can also use their radio courses as one ready-made source of material for English and Development Studies. In exchange, Brigades could become useful to the university centres, where they can do research and try out techniques of adult education based on radio and local discussion groups.

The Botswana Training Centre

As it develops into an institution for higher technician, management and administrative training, the Training Centre's main relevance to Brigades will be in providing further training for Brigade managers.

The Botswana Agricultural College

With its courses for agricultural-extension officers and community-development assistants, the College is the educational institution in Botswana most concerned with rural development. The links between this and the National Brigade Staff School should be close and fruitful: both will be dealing with the same fundamental problems of changing attitudes, and producing people capable of generating development in a local community. The BAC and the Brigades can usefully exchange ideas, experience and teaching materials. They can build links between extension services and Farmers' Brigades—particularly *in situ* village schemes—and find ways of involving Brigade trainees in local demonstration work. In community development, Brigades can provide centres and specific skill training to help to translate some of the broad aims of community-development work into practical schemes.

The Vocational Training Centre

This Centre, now being set up by the ILO, will provide extremely professional and specific vocational-training programmes, and will be an invaluable source of expertise for the Brigades, helping to define what they should hope to achieve in their theory teaching, and providing teaching materials and ideas which can be adapted to the special needs of Brigades. The Centre is the obvious place for further training of Brigade graduates working in the modern sector, and the Brigade graduates, with their broad-based and practical initial training in the Brigades and some working experience, should provide excellent recruits for the Centre. Again, the formal links between the Centre and the Brigades should be the Staff School.

Teacher-training Colleges

Brigade people should try to visit teacher-training colleges, tell students about their work, and inform students going to primary schools of the opportunities which they offer to school-leavers. They should also try to interest both primary and secondary training-college students in the work the Brigades are doing, and the opportunities that they offer for experimental teaching. The Brigades at Lobatsi, Serowe and Shashi River (for Francistown) can invite lecturers and students to look at their work and perhaps occasionally to take part in Development Studies sessions. Higher primary and secondary teachers must provide the main source of "academic" teachers for Brigades: their training is a good time to try to interest them in Brigades. If possible, links should also be built with the University School of Education.

Rural Training Centres

These Centres are working at much the same level as the non-modern-sector brigades. At instructor level, there is plenty of scope for exchanging ideas on what to teach and how to teach it, and for joint development of basic materials in English and Setswana (here again the NBSS would provide an information centre). The Mochudi farmers have already established links with the rural training centre outside Gaborone; the Mahalapye PTC is well placed to work with Madiba School, and the new Maun RTC with the Ngamiland Youth Training Centre.

In their slack time, from November to January, the RTCs told me that they could lay on short courses for Brigades or at other times, if they are planned well in advance. They are beginning to develop travelling courses, which go out to the villages, and these too could become an excellent resource. The welfare courses which RTCs run (with the International Planned Parenthood Federation) have direct relevance to some of the Development Studies work which Brigades should do (especially with women): they can provide materials and, as travelling courses are developed, teachers for short intensive sessions on nutrition, health and child care.

Conclusion

Links between Brigades and other institutions at all levels are crucial to the Development of the Brigade system. So far, co-operation has been one-sided, with schools and other institutions helping the Brigades. This has been inevitable when Brigades have been struggling to establish themselves, and they will continue to depend heavily on other, more privileged institutions for expert help and resources. I found considerable understanding and sympathy for the Brigade movement among people involved in higher and further education, and willingness to share some resources and to help to adapt teaching materials. These intentions will be easier to translate into concrete co-operation when the Staff School opens.

As the Brigade movement develops, the higher and further education system will have another important role—providing further training for Brigade people at all levels, from ex-trainees to managers. It would be a great help if institutions such as the Vocational Training Centre, the Botswana Agricultural College, and the Botswana Training Centre could arrange to take people with a satisfactory Brigade record for appropriate courses, disregarding their lack of paper academic qualifications. If the Brigade curriculum develops, as I believe it can, such people will more than make up for their lack of school learning by their knowledge of practical techniques, their ability to think for themselves and to solve problems, and their knowledge of the world.

At school level (outside the Brigades and schools), co-operation has hardly started. The only way to achieve it is locally, with individual schools and Brigade centres discovering how the schools can find ways of lending resources.

National Brigade Staff School

I have written this report with the plans for a National Brigade Staff School at the front of my mind. If Brigades are to fulfil their potential and develop a new educational style which fits the needs of the country and of people who have no chance of jobs in the modern sector, it seems to me essential that the plans for the Staff School should go ahead. When I was in Botswana, initial finance had been raised and the Ministry of Education had agreed in principle to the establishment of the School.

One of the great strengths of the Brigade centres so far has been their freedom to experiment. In designing their training and educational programmes, they had virtually no external constraints. But there has been no central place where ideas could be translated into practical teaching techniques, where instructors could be trained in these techniques, and where local artisans could gain the kind of knowledge and understanding of the development of Botswana that would enable them to communicate the idea behind the Brigades to their trainees.

The approach to the curriculum that I have suggested involves a great deal of hard thinking and development work. Subject matter—both theory and non-theory—should be pared down to a hard core, and check lists of essential concepts and topics should be prepared for instructors and teachers to use as guides to the ground that they should attempt to cover.

The kind of open-discussion group teaching that I have recommended for Development Studies has proved, in Britain, extremely difficult and sometimes upsetting for teachers who are not used to students working things out for themselves and discussing things openly and critically. The best way to approach it seems to be to ask the teachers to work in the same way, either in their initial training or on short in-service courses. It is no good giving lectures and notes about group teaching and then expecting teachers to go out and do it or talking about participation to people who have no part in running the institution that they are trained in. The planners of the Staff School are well aware of this: in the project memorandum they say "subjects like development and Brigade studies will be taught as much by group discussion and participation as by conventional methods".

Both the central thinking about the curriculum and the development work on teaching methods will be a central function of the Staff School. With such a school, it will be possible to experience the practical and psychological problems of changing from an authoritarian to a democratic style of work—the only way, it seems to me, of making Brigade trainees more self-reliant and confident of their own abilities. Brigade instructors can work in the new style during their own training and try out new ideas in teaching practice with Brigade trainees. The staff of the School will be well placed to work out with instructors the essential theory needed for Brigade teaching. Again, the NBSS students can try out different ways of teaching theory, not only in the classroom but on the job or in the workshop. They can develop the habits essential for any teacher working in an open situation—watching for chances to draw out an observation or idea from the trainees, following it up, keeping a record of the ground that they have covered week by week, looking for individual differences and talents in their group.

The NBSS would be an information and resource centre for Brigades. It could produce reading materials for English, and ideas for mathematics teaching. It could

provide short, clear, relevant notes (in Setswana and English), which teachers and instructors could use as background information to bring into theory or Development Studies work. It could experiment with, and develop, games and simulation exercises to help with the commercial-studies element in the course. Its staff would be able to visit Brigade centres, and provide guidance and in-service training on the spot (much as the NBCC accountant provides guidance and training on the commercial side). They could follow their students out into other Brigade centres, keep track of the work the other centres are doing, and circulate good ideas and materials. They would build links with other institutions and identify the resources that they can provide. They could run short in-service courses for part-time teachers employed by Brigades, to try to show them something of the aims of the Brigades and the methods being used to achieve them.

In general, the School, by providing the power to translate some of the original Brigade ideals into practice, could have an influence in education reaching beyond the limits of the Brigade movement. Several officials of the Ministry of Education talked to me of the urgent need to broaden both the primary and secondary curriculum, making the first suitable for the large proportion of children who have no chance of going to secondary school, and making the second much more practical. They all mentioned the overwhelming difficulties of changing the attitudes engendered by the colonial education system. In the Brigades, they have an excellent test bed, situated neatly between the secondary school, modern-sector technical training, and adult education for rural development, where new techniques suitable for the needs of a developing country can be tried out, and working models of different approaches can be demonstrated (the flood of visitors to Brigades from all over the world indicates the need for such models).

Up to now, Brigades, working with limited resources and concerned first to survive financially, have been operating on a rather hand-to-mouth basis, particularly on the educational side. The establishment of the Staff School by the Ministry of Education will provide a much-needed centre and can create a powerful institution for generating ideas and techniques for education for national and rural development which would be relevant far beyond Botswana.

List of Publications

The following are some of the publications issued by the Dag Hammarskjöld Foundation:

Mass Education. Studies in Adult Education and Teaching by Correspondence in Some Developing Countries. Edited by Lars-Olof Edström, Renée Erdos and Roy Prosser, 379 pp. Uppsala, 1970.

Sovereignty, Aggression and Neutrality. Three lectures by Hans Blix, 64 pp. Uppsala, 1970.

The Image of the Developing Countries: An Inquiry into Swedish Public Opinion. By Stig Lindholm, 100 pp. Uppsala, 1971.

The World Development Plan: A Swedish Perspective. By Ernst Michanek, 71 pp. Uppsala, 1971.

Nutrition: A Priority in African Development. Edited by Bo Vahlquist, 228 pp. Uppsala, 1972.

The Treaty-Maker's Handbook. Edited by Hans Blix and Jirina H. Emerson, 355 pp. Uppsala, 1973.

Technical Assistance Administration in East Africa. Edited by Yashpal Tandon, 209 pp. Uppsala, 1973.

The above publications may be ordered from

ALMQVIST & WIKSELL,
International Publishers & Booksellers,
P. O. Box 62,
101 20 Stockholm, Sweden.

Report from Swaneng Hill

In this book, Patrick van Rensburg describes his attempt to pioneer in Botswana a programme of secondary education appropriate to an emerging African country with a per capita income of about £85 per year. In such circumstances, the author believed, education ought to evoke a commitment to development with social justice among the educated minority. He also felt that it was necessary to make secondary education less costly and much less exclusive and that the school should be a focal point for development.

The search for measures to implement these aims met with some success, but it also revealed that situations which were ostensibly educational had vital social, economic and political dimensions; this realization led the author to doubt whether some of the aims he had set for his school could in fact be achieved by schools.

One of the by-products of the experiment in educational reform was the establishment of the Brigades, a programme of on-the-job technical training for the rejects of the usual secondary school system, in which trainees learned while they worked, with the earnings covering much of the cost of their training. Here too, the experience in attempting to solve a problem uncovered new dimensions of the problem.

After ten years of work, the author suggests political and economic strategies which he believes will more surely promote popularity-based development. Although he concludes that education cannot by itself bring about social change, and that effective educational reforms require policy changes in the socio-economic system, he nevertheless believes much can be done to combine programmes of employment-creation and education, and that work in this field can help promote social change. Models of such employment-oriented educational programmes are described and discussed in detail.

The Dag Hammarskjöld Foundation was established in 1962 in memory of the late Secretary-General of the United Nations. Its purpose is to organize seminars and conferences on the legal, economic and social problems of the developing countries. The offices of the Foundation are in Uppsala, Sweden.

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